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From the Editor's Desk

Diabetes mellitus (sugar diabetes) presents *SB* with an important finding this issue. The mortality rate for the disease declined sharply in the past decade, by nearly one-third. Our discovery of this change came unexpectedly as a result of an earlier editorial staff decision to study diabetes because of its public health significance. When we realized the magnitude of this decline, we sought to explain its cause. One consequence of our efforts was to ask Dr. Maureen Harris, a nationally recognized authority on diabetes, to provide a commentary for our readers, which you may also read in this issue. The most remarkable thing about this beneficial change is that no good explanation has been offered for it. Because diabetes may afflict 5 percent of adult Americans, such a decrease, if it persists and has widespread, healthy effects, could materially contribute to the continued decline in atherosclerotic disease in the United States.

Some Disconcerting Cancer News

In the second article to appear in *SB* about the closing gap in women's mortality rates from lung and breast cancer, an analysis and report present differences in death rates by regions of the United States and by individual states. What is happening in the states and parts of the country you are familiar with, those in which you live, work, or have traveled? Clearly, not all states are comparably afflicted, but the degree of variation in lung cancer death rates, with a few exceptions (e.g., North Dakota, Utah), tends to be unremarkable. In other words, smoking and women's lung cancer is a real national problem.

Respiratory cancers are an important international health problem for men and women, as our article on that subject attests. Though the increased death rates have slowed in many western countries, they are still appallingly high in the United Kingdom, for example.

Continued Cost Analysis: T&A

Tonsillectomy and adenoidectomy (T&A) are analyzed as a part of our continuing series on the charges and the lengths of stay in the hospital for the common surgical procedures, as shown by regions of the United States. Though declining in their rate per capita, T&As remain a major procedure in the 1980s, and one that appears on most surgical second-opinion lists in 1985.□

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

Diabetes Mortality Sharply Declined in Past Decade

In the United States there were an estimated 35,500 deaths from diabetes mellitus in 1984 or approximately the same number as in 1983. Although the number of deaths from diabetes has apparently increased somewhat from the final count of 34,583 in 1982, the mortality toll from this disease only accounts for less than 2 percent of all deaths. Nonetheless, diabetes currently ranks as the 7th leading cause of mortality in our country. Moreover, the relative ranking would rise to 5th place if diseases of the heart and cerebrovascular diseases were to be combined into one category and if accidents—a nondisease cause of death—were excluded. Notwithstanding, the importance of diabetes is still greatly understated because the present coding system selects a single underlying cause of death in tabulating mortality statistics and excludes deaths from diabetes when mentioned as a contributory cause on the death certificate. Diabetes is implicated as an associated cause of death or a significant risk factor in a substantial proportion of deaths from other causes, particularly those of the cardiovascular-renal system.[1,2]

Etiology and Epidemiology

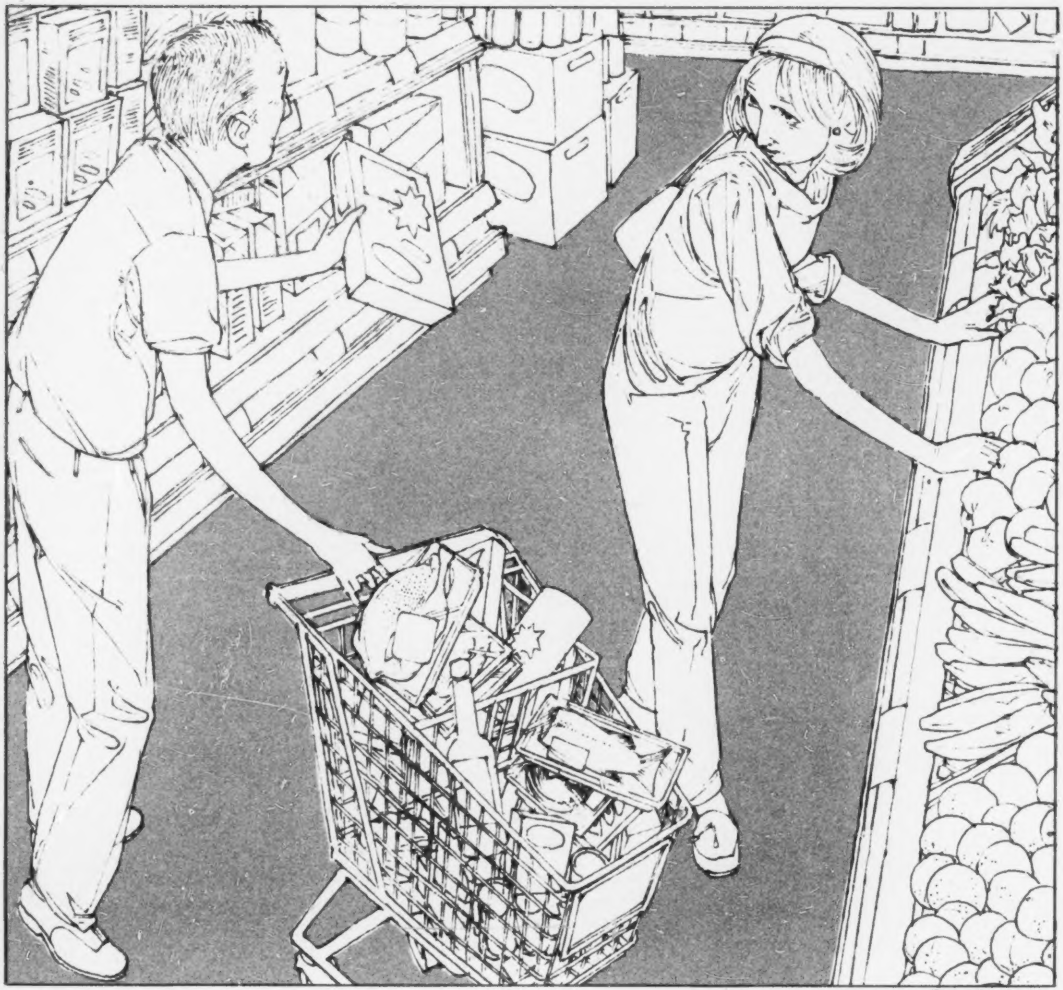
Diabetes results from the interaction of various hereditary and environmental factors, and is characterized by abnormal insulin secretion along with a variety of metabolic and vascular indications. It is a certifiable chronic, nonhomogeneous disease because its signs and symptoms are exhibited over a period of years and the several subcategories display different patterns.

The varying manifestations of diabetes are not just clinical, they also appear in the epidemiology of the disease. Thus, diabetes occurs more frequently in industrialized countries, generally in more affluent societies, among older populations, and has been characterized by a greater prevalence and higher mortality among women. In the United States, the sex differential in mortality has been recently reversed; death rates are now generally lower among females than among males. In addition, for both sexes there have been some substantial reductions in regional mortality rates, although significant geographic disparities remain. The following analysis is the first in a new series of *Statistical Bulletin* articles that will present regional statistics based on the 1980 population census and deaths which occurred in 1979, 1980 and 1981.

> In the United States, the sex differential has been recently reversed; death rates are now generally lower among females than among males.

Overall Decline in Rates

In the United States during 1979-81, mortality from diabetes among white males aged 45-74 averaged 24 per 100,000, compared with 32 per 100,000 in 1969-71—or a reduction of 25 percent. Among white females the corresponding death rates were 21 per 100,000 and 31 per 100,000 respectively, representing a 32 percent decline. The sex differential in mortality in favor of white females is now 3 per 100,000, widening from 1 per 100,000 in 1969-71, and continuing the reversal that occurred after 1959-61.

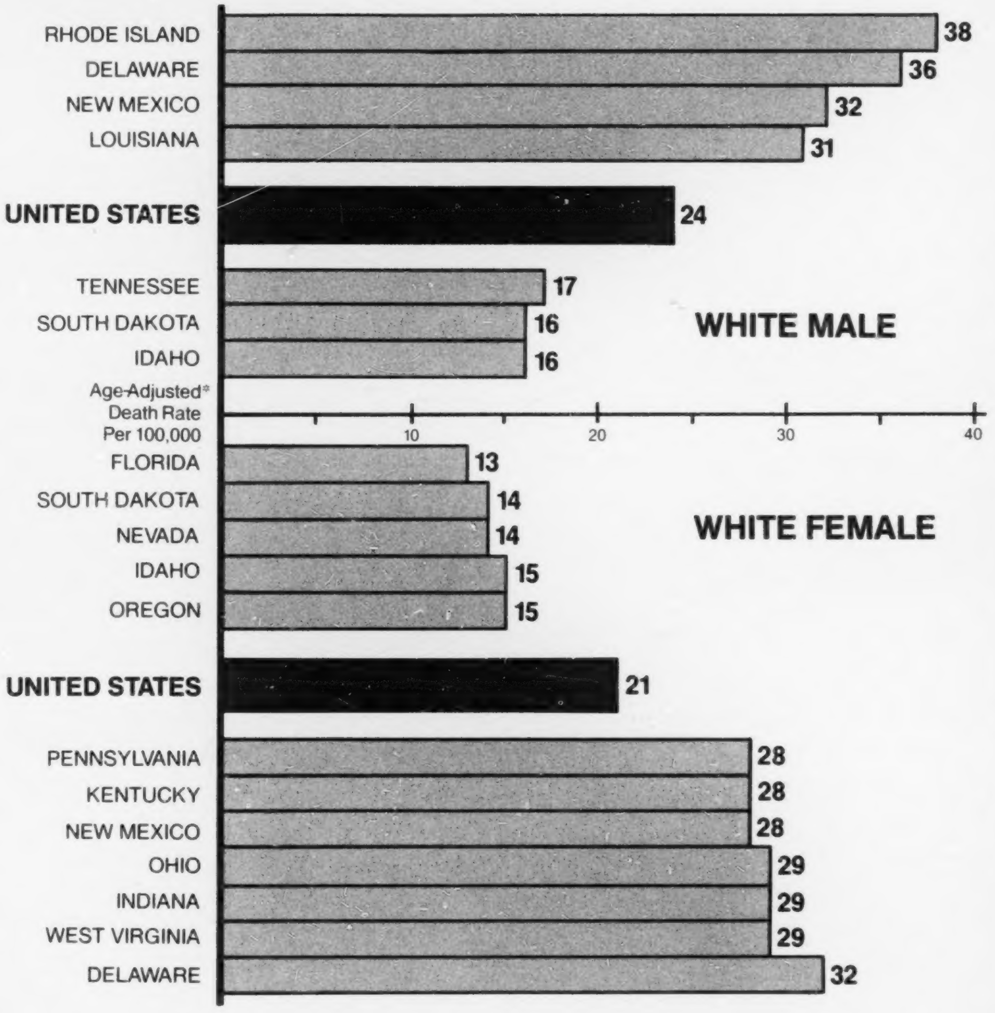


David Johnson

Each of the nine geographic divisions experienced a significant reduction in mortality between 1969-71 and 1979-81.

Each of the nine geographic divisions of the United States experienced a significant reduction in mortality from diabetes between 1969-71 and 1979-81. An analysis of age-adjusted death rates for the white population reveals that, for males, the decrease ranged from 17 percent in the West South Central and Middle Atlantic divisions to 28 percent in the West North Central and East South Central divisions. Among females the relative declines were more pronounced, varying from 22 percent in the Pacific area to as high as 44 percent in the New England division of the country.

States With Highest and Lowest Mortality From Diabetes White Population Aged 45-74, by Sex United States, 1979-81



*Adjusted on basis of age distribution of the United States total population, 1940.

In 1979-81, mortality from diabetes in the white population was higher among males than among females in every geographic division of the country with the exception of the East South Central division, where the rates were the same. For men aged 45-74, the age-adjusted death rate was highest in the Middle Atlantic division and lowest in the Pacific states—the death rates being 29 and 19 per 100,000, respectively. These mortality rates represent a regional disparity of over 50 percent and is virtually the same relative difference that occurred a decade earlier between the East North Central and Pacific divisions. On the other hand, among women, the geographic mortality differential narrowed appreciably in the past 10 years. In 1969-71 the lowest death rate for diabetes was reported in the Pacific division—23 per 100,000—and the highest was experienced in the states that comprised the East North Central division—38 per 100,000—or nearly two-thirds greater. By 1979-81 the relative differential decreased to just two-fifths, with the highest mortality still occurring in the East North Central division and the lowest rate—18 per 100,000—now being recorded in four separate divisions of the country. Particulars of the divisional mortality analysis are presented in Tables 1 and 2.

> States with high mortality rates from diabetes in 1979-81 were in the same relative position a decade earlier.

Table 1—Age-Adjusted Mortality Rate From Diabetes White Males Aged 45-74

United States, 1969-71 and 1979-81

	Death Rate per 100,000	
Geographic Division*	1969-71	1979-81
Pacific	25	19
Mountain	26	20
West North Central	29	21
East South Central	29	21
South Atlantic	30	22
West South Central	29	24
UNITED STATES	32	24
New England	34	26
East North Central	38	28
Middle Atlantic	35	29

*In 1979-81 rank order. See Tables 3 and 4 for states that make up the geographic divisions.

Table 2—Age-Adjusted Mortality Rate From Diabetes White Females Aged 45-74

United States, 1969-71 and 1979-81

	Death Rate per 100,000	
Geographic Division*	1969-71	1979-81
New England	32	18
West North Central	30	18
South Atlantic	27	18
Pacific	23	18
Mountain	27	19
East South Central	30	21
UNITED STATES	31	21
West South Central	32	22
Middle Atlantic	35	24
East North Central	38	26

*In 1979-81 rank order. See Tables 3 and 4 for states that make up the geographic divisions.

State Variations

Among individual states in 1979-81, the age-adjusted mortality rate from diabetes among white males in Rhode Island (38 per 100,000) was more than twice the death rate in South Dakota and Idaho (16 per 100,000). Compared with the national average (24 per 100,000), death rates were more than 25 percent higher in Delaware, New Mexico and Louisiana, while in Tennessee the mortality rate was significantly lower. The figure on page 4 graphically presents the preceding data as well as the results for women. For white women aged 45-74, the death rate was highest in Delaware—32 per 100,000. In addition, in six other states (Ohio, Indiana, West Virginia, Pennsylvania, Kentucky and New Mexico), mortality rates from diabetes were at least 25 percent above the average for the nation as a whole. On the other hand, rates of this magnitude below the countrywide figure were experienced in Oregon, Idaho, Nevada, South Dakota and Florida. In fact, women in Florida also had the most favorable record from diabetes in 1969-71.

In 1984 the economic impact of diabetes was estimated to be $13¾ billion.

For the most part, states with high mortality rates from diabetes in 1979-81 also were in the same relative position a decade earlier. Thus, white males in Rhode Island, Delaware, Louisiana, Ohio and Michigan reported mortality rates significantly above the national average, while among white females the states in the unfavorable category included Delaware, Ohio, Pennsylvania, Michigan and Rhode Island. It should be mentioned that in some of these states, as well as a number of other states, substantial mortality reductions were experienced between 1969-71 and 1979-81.

As a result of the impressive mortality reductions in the past decade, especially among white females, in 1979-81 only a handful of states reported higher death rates from diabetes among females than among males. A decade earlier, female death rates were higher in 25 states. Currently, only West Virginia, Kentucky, Tennessee, Wyoming, Colorado and Utah reported death rates for which males had a mortality advantage and in most instances it was very small. In North Dakota and Oklahoma the death rate was the same for each sex.

Age-Specific Data

For all intents and purposes, mortality from diabetes is concentrated at the older ages. For the specific age groups examined in this study, death rates in the United States at ages 65-74 were about seven times the rate at ages 45-54. At ages 45-54 for both white men and women mortality from diabetes was less than 10 per 100,000. Rates in the low to middle twenties were experienced at ages 55-64—less than two-fifths the rate at ages 65-74.

During 1979-81 the highest mortality rate from diabetes among white men aged 65-74 was recorded in the Middle Atlantic states, closely followed by the East North Central states—74 and 73 per 100,000, respectively. The lowest death rate occurred in the West North Central area of the country—46 per 100,000. Mortality from diabetes ranged from a low of 32 deaths

Table 3—Regional Trend in Mortality From Diabetes White Males Aged 45-74, United States, 1969-71 and 1979-81

	Death Rate per 100,000								Percent Decrease 1969-71 to 1979-81			
	1969-71				1979-81							
Area	Ages 45-74*	Ages 45-54	Ages 55-64	Ages 65-74	Ages 45-74*	Ages 45-54	Ages 55-64	Ages 65-74	Ages 45-74*	Ages 45-54	Ages 55-64	Ages 65-74
United States	32	11	32	81	24	9	25	60	25	18	22	26
New England	34	14	33	88	26	10	27	62	24	29	18	30
Maine	29	†	28	73	23	†	24	59	21	‡	14	19
New Hampshire	36	†	31	106	28	†	30	73	22	‡	3	31
Vermont	36	†	†	92	19	†	†	47	47	‡	‡	49
Massachusetts	35	14	34	86	27	12	29	63	23	14	15	27
Rhode Island	44	18	42	109	38	16	44	81	14	11	+5	26
Connecticut	32	12	30	82	20	7	18	54	38	42	40	34
Middle Atlantic	35	12	35	88	29	10	29	74	17	17	17	16
New York	33	13	33	85	28	10	29	73	15	23	12	14
New Jersey	35	11	37	91	29	10	31	73	17	9	16	20
Pennsylvania	37	13	38	91	29	11	28	76	22	15	26	16
East North Central	38	13	38	100	28	9	28	73	26	31	26	27
Ohio	41	13	40	110	30	9	29	83	27	31	28	25
Indiana	37	12	37	99	30	9	34	75	19	25	8	24
Illinois	31	12	33	74	27	9	27	71	13	25	18	4
Michigan	48	16	45	130	27	10	27	69	44	38	40	47
Wisconsin	36	13	36	92	23	8	25	57	36	38	31	38
West North Central	29	10	28	75	21	10	24	46	28	‡	14	39
Minnesota	28	12	24	70	25	10	36	42	11	17	+50	40
Iowa	27	11	27	65	22	11	19	53	19	‡	30	18
Missouri	32	9	34	85	20	7	23	48	38	22	32	44
North Dakota	24	†	†	85	18	†	†	32	25	‡	‡	62
South Dakota	29	†	26	71	16	†	†	†	45	‡	‡	‡
Nebraska	32	13	29	83	20	10	21	41	38	23	28	51
Kansas	26	9	26	68	25	11	24	57	4	+22	8	16
South Atlantic	30	11	32	75	22	9	24	51	27	18	25	32
Delaware	45	†	†	132	36	†	41	85	20	‡	‡	36
Maryland	39	10	38	112	29	11	27	73	26	+10	29	35
District of Columbia	37	†	†	†	†	†	†	†	‡	‡	‡	‡
Virginia	24	8	25	61	20	9	20	48	17	+13	20	21
West Virginia	24	9	26	59	24	8	26	58	‡	11	‡	2
North Carolina	34	13	34	85	25	10	30	53	26	23	12	38
South Carolina	43	14	45	113	26	10	27	61	40	29	40	46
Georgia	34	13	35	83	21	8	22	51	38	38	37	39
Florida	26	9	29	60	18	7	21	43	31	22	28	28
East South Central	29	10	30	74	21	9	21	49	28	10	30	34
Kentucky	33	11	38	82	26	10	26	63	21	9	32	23
Tennessee	25	10	25	59	17	9	17	37	32	10	32	37
Alabama	29	8	28	79	22	8	22	56	24	‡	21	29
Mississippi	30	13	25	79	21	†	19	42	30	‡	24	47
West South Central	29	11	29	72	24	9	24	61	17	18	17	15
Arkansas	25	12	21	62	18	8	19	43	28	33	10	31
Louisiana	39	14	38	101	31	10	30	82	21	29	21	19
Oklahoma	28	10	26	73	20	8	19	49	29	20	27	33
Texas	28	11	29	67	25	9	25	63	11	18	14	6
Mountain	26	10	24	70	20	8	20	48	23	20	17	31
Montana	29	†	32	70	18	†	†	37	38	‡	‡	47
Idaho	27	†	24	69	16	†	†	38	41	‡	‡	45
Wyoming	20	†	†	†	18	†	†	†	10	‡	‡	‡
Colorado	19	†	17	54	18	6	18	45	5	‡	+6	17
New Mexico	31	18	25	72	32	16	33	67	+3	11	+32	7
Arizona	28	13	24	71	20	8	20	48	29	38	17	32
Utah	34	†	31	93	19	†	22	47	44	‡	29	49
Nevada	32	†	†	98	19	†	†	48	41	‡	‡	51
Pacific	25	9	24	65	19	7	19	50	24	22	21	23
Washington	30	13	28	77	21	6	20	56	30	54	29	27
Oregon	23	7	24	58	18	6	20	43	22	14	17	26
California	24	8	24	63	19	7	19	49	21	13	21	22
Alaska	†	†	†	†	†	†	†	†	‡	‡	‡	‡
Hawaii	32	†	†	†	21	†	†	†	34	‡	‡	‡

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 20 deaths; rate not computed.

‡Not applicable.

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

Table 4—Regional Trend in Mortality From Diabetes White Females Aged 45-74, United States, 1969-71 and 1979-81

Area	Death Rate per 100,000 1969-71				1979-81				Percent Decrease 1969-71 to 1979-81			
	Ages 45-74*	Ages 45-54	Ages 55-64	Ages 65-74	Ages 45-74*	Ages 45-54	Ages 55-64	Ages 65-74	Ages 45-74*	Ages 45-54	Ages 55-64	Ages 65-74
United States	31	9	30	88	21	7	21	56	32	22	30	36
New England	32	9	31	90	18	5	17	52	44	44	45	42
Maine	35	†	33	95	16	†	16	44	54	‡	52	54
New Hampshire	42	18	52	87	19	†	20	55	55	‡	62	37
Vermont	28	†	34	50	18	†	†	55	36	‡	‡	10
Massachusetts	31	8	30	87	18	4	17	54	42	50	43	38
Rhode Island	47	11	35	153	24	†	21	61	49	‡	40	60
Connecticut	28	7	27	79	16	5	15	47	43	29	44	41
Middle Atlantic	35	10	32	103	24	8	24	65	31	20	25	37
New York	31	9	28	90	22	7	21	57	29	22	25	37
New Jersey	36	9	32	107	23	9	21	62	36	‡	34	42
Pennsylvania	42	11	39	122	28	8	28	78	33	27	28	36
East North Central	38	11	34	109	26	8	25	69	32	27	26	37
Ohio	42	12	38	121	29	9	28	79	31	25	26	35
Indiana	39	11	37	108	29	9	28	81	26	18	24	25
Illinois	31	11	28	84	23	8	24	58	26	27	14	31
Michigan	45	12	35	142	25	7	23	70	44	42	34	51
Wisconsin	33	9	31	91	21	8	22	54	36	11	29	41
West North Central	30	9	29	81	18	6	18	48	40	33	38	41
Minnesota	25	8	22	69	16	5	17	43	36	38	23	38
Iowa	29	9	25	83	19	7	17	48	34	22	32	42
Missouri	36	11	37	93	18	4	20	50	50	64	46	46
North Dakota	28	†	30	85	18	†	†	54	36	‡	‡	36
South Dakota	26	†	33	55	14	†	†	44	46	‡	‡	20
Nebraska	27	9	24	73	19	10	16	47	30	11	33	36
Kansas	30	9	28	86	20	7	21	50	33	22	25	42
South Atlantic	27	8	27	72	18	6	18	46	33	25	33	36
Delaware	58	†	61	165	32	†	27	106	45	‡	56	36
Maryland	41	10	36	123	24	8	21	67	41	20	42	46
District of Columbia	21	†	†	48	†	†	†	†	‡	‡	‡	‡
Virginia	22	6	21	65	16	6	18	40	27	‡	14	38
West Virginia	37	13	39	90	29	8	30	76	22	38	23	16
North Carolina	29	8	29	77	18	5	20	49	38	38	31	36
South Carolina	36	10	35	101	23	6	25	59	36	40	29	42
Georgia	28	10	29	70	18	5	17	54	36	50	41	23
Florida	18	6	19	47	13	5	14	32	28	17	26	32
East South Central	30	8	30	83	21	6	21	57	30	25	30	31
Kentucky	35	9	36	98	28	8	28	76	20	11	22	22
Tennessee	27	8	28	74	18	5	20	47	33	38	29	36
Alabama	29	6	27	87	20	4	21	56	31	33	22	36
Mississippi	27	10	27	69	17	†	14	48	37	‡	48	30
West South Central	32	10	31	86	22	7	22	59	31	30	29	31
Arkansas	27	†	29	78	17	†	16	49	37	‡	45	37
Louisiana	40	12	40	109	26	7	25	74	35	42	38	32
Oklahoma	24	7	22	67	20	7	20	51	17	‡	9	24
Texas	33	11	32	88	23	8	24	60	30	27	25	32
Mountain	27	7	26	75	19	8	17	49	30	14	35	35
Montana	21	†	†	62	16	†	†	46	24	‡	‡	26
Idaho	29	†	28	82	15	†	†	37	48	‡	‡	55
Wyoming	23	†	†	†	19	†	†	64	17	‡	‡	‡
Colorado	24	7	21	72	21	10	18	50	13	43	14	31
New Mexico	37	†	42	98	28	13	26	64	24	‡	38	35
Arizona	21	†	27	50	17	6	16	45	19	‡	41	10
Utah	33	†	29	111	23	†	21	61	30	‡	28	45
Nevada	33	†	†	116	14	†	†	33	58	‡	‡	72
Pacific	23	7	22	62	18	7	18	44	22	‡	18	29
Washington	28	10	25	75	20	9	19	51	29	10	24	32
Oregon	22	7	23	56	15	7	14	39	32	‡	39	30
California	22	6	21	60	17	6	19	43	23	‡	10	28
Alaska	†	†	†	†	†	†	†	†	‡	‡	‡	‡
Hawaii	38	†	†	†	†	†	†	†	‡	‡	‡	‡

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 20 deaths; rate not computed.

‡Not applicable.

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

per 100,000 in North Dakota to a high of 85 per 100,000 in Delaware. The analysis of mortality of white women at these ages revealed that the death rate was lowest in the Pacific states—44 per 100,000—and was highest in the East North Central division—69 per 100,000. On an individual state basis, the rates varied from as little as 32 per 100,000 in Florida to 106 per 100,000 in Delaware, or more than three times as large. White males aged 55-64 still maintained a mortality advantage over their female counterparts in West Virginia, Kentucky, Tennessee and Oklahoma. For persons 10 years older, there were 20 states in which the mortality differential favored males. However, with the passing of time these instances have diminished.[3] Complete details of the mortality rates by geographic area are shown in Tables 3 and 4.

Death rates from diabetes in the United States at ages 65-74 were about seven times the rate at ages 45-54.

No Easy Explanations

Various explanations have been offered to account for the regional differences in mortality from diabetes. These include variations in diagnostic and coding procedures as well as fluctuations in the quality of medical care. However, no definite reasons for the disparities have been documented.

Diabetes remains an enigma. It is a disease in which considerable progress has been made in treatment and survival. However, these same successes have increased the number of persons suffering from its complications. In addition, advances in diagnostic procedures have identified many cases at an earlier disease stage than previously. Thus, the combination of these two factors has increased the burden on the health care system. In 1984 the economic impact of diabetes in the United States was estimated to be 13¾ billion dollars.[4] This cost has steadily increased since 1969 when estimates were first made.[5] Hopefully, medical research will add to our knowledge and treatment; meantime, diabetes remains a major public health problem. □

References

[1] Harris, M. and Entmacher P.S. Mortality From Diabetes. In: M. Harris, R. Hamman (Eds.): "Diabetes in America." National Institutes of Health. Pub. No. 85-1468. Gov't. Printing Office. Washington, D.C., 1985. Chap. 29.

[2] Butler, W.J., Ostrander, L.D., Jr. Carman, W.J., and Lamphiear, D.E. "Mortality from coronary heart disease in the Tecumseh study. Long-term effect of Diabetes Mellitus, glucose tolerance and other risk factors." *American Journal of Epidemiology* 121:541-47, 1985.

[3] Entmacher, P.S., Krall, L.P. and Kranczer, S.N., Diabetes Mortality from Vital Statistics. In: "Joslin's Diabetes Mellitus," 12th Ed., Philadelphia, Lea & Febiger, 1985, pp 278-297.

[4] Entmacher, P.S., Sinnock, P., Bostic, E., and Harris, M. Economic Impact of Diabetes. In: M. Harris, R. Hamman (Eds.): "Diabetes in America." National Institutes of Health. Pub. No. 85-1468. Gov't Printing Office, Washington, D.C., 1985. Chap. 32.

[5] Krall, L.P., Entmacher, P.S., and Drury, T.F., Life Cycle in Diabetes: Socioeconomic Aspects. In: "Joslin's Diabetes Mellitus," 12th Ed. Philadelphia, Lea & Febiger, 1985, pp 907-936.

Commentary

The Death Rate Decline for Diabetes

Mortality statistics are important when assessing any disease's national impact. Politicians use them to justify government health budgets. Special interest groups (e.g., cancer, heart) use them to convince the public that a particular disease has great impact. The media often mention how many lives are "lost" from a particular disease or how it ranks as a leading "killer." Thus, the decline in deaths coded to diabetes as the underlying cause, as documented in the accompanying article "Diabetes Mortality Sharply Declined in Past Decade," on page 2, might seem disconcerting to many actively working in the field of diabetes. Instead, let us consider it a provocative development.

The article presents details of the decline that are based on death certificates filed in the United States during the periods 1969-71 and 1979-81.

There was a 32 percent (females) and 25 percent (males) decrease in the age-standardized rate of diabetes deaths occurring at ages 45-74 years, an age range in which 55 percent of deaths coded to diabetes occur.

The decline is impressive: in just one decade there was a 32 percent (females) and 25 percent (males) decrease in the age-standardized rate of diabetes deaths occurring at ages 45-74, an age range in which about 55 percent of deaths coded to diabetes occur. (For all causes of death, an 18 percent decline in the death rate at all ages occurred during the same decade.) In addition, the decline occurred at a time when the death rate from diabetes could be expected to rise because of a significant increase in diabetes prevalence.

During the 1960s, there was a rapid rise in new diagnoses of diabetes, probably because of active screening. Concomitantly, diabetes prevalence rose from 0.9 percent in 1960 to 1.8 percent in 1970; in 1980 it was about 2.5 percent. Those newly discovered cases of the 1960s were as much as 20 years older by 1979-81 and should have begun to experience mortality, thus increasing the diabetes death rate. Instead, a decline occurred.

Two Likely Explanations

The decline may be explained two ways. One is that it is artifactual because of changes in the death certification process, i.e., persons who fill out death certificates may be less likely to list diabetes where it would be selected as the underlying cause of death. The second is that biological/clinical phenomena have occurred during the decade, so that diabetics are surviving longer. It is likely that both explanations contribute to the observed decline.

Sufficient data do not exist to determine whether there has been a systematic decrease in listing diabetes on death certificates of diabetics. However, there is documentation of a decrease from 28.5 percent (1968) to 25.9 percent (1978) of certificates that list diabetes in which it is the underlying cause of death. This constitutes a 9 percent decline, and thus could account for about one-fourth of the decline experienced from 1969-71 to 1979-81.

The majority of death certificates listing diabetes also list a cardiovascular condition, whether diabetes is or is not selected as the underlying cause of death. For example, among deaths at ages 35 years and older, about 60 percent of diabetes underlying-cause deaths involve ischemic heart disease and 25 percent involve cerebrovascular disease. The decline in mortality from heart diseases has been well-documented, and it is likely that diabetics are benefiting from factors causing this general decline in the United States as a whole. Some of these factors are: decreases in hypertension, cigarette smoking, obesity and cholesterol, as well as improved coronary heart disease care, including emergency resuscitation and specialized hospital care; more physical exercise and better nutrition; and better general health, which might result from higher socioeconomic status. These factors are all likely contributors to the improved outcomes for diabetics with cardiovascular problems. Between 1970 and 1980, the age-adjusted death rate from cardiovascular diseases declined 26 percent, which could account for the other three-fourths of the decline in the diabetes death rate.

Between 1970 and 1980, the age-adjusted death rate from cardiovascular diseases declined 26 percent, which could account for the other three-fourths of the decline in the diabetes death rate.

No Clear Regional Patterns

There is no clear regional pattern to the decline. Some states with high rates had large declines, but states with rates lower than the national average in 1969-71 also had large declines. For white females in 1969-71, the 45-74 years age-standardized rate was higher than the national rate in 21 states; in 1979-81, 15 of these states were still above the national average rate. For white males a similar phenomenon occurred: 20 states were higher than the U.S. in 1969-71 and 15 of these were still higher a decade later.

Interestingly, many of these high-rate states are clustered together, in a broad band from Massachusetts in the north and Maryland in the south, west to Wisconsin and including states bordering the Great Lakes and their neighbors Kentucky and West Virginia. A second high-rate area is formed by North and South Carolina and Georgia. Louisiana and Utah constitute isolated high-rate spots. States in the West region tended to have the lowest rates in both time periods. It is unknown why such regional patterns occurred.

While the decline in the diabetes death rate is a welcome public health phenomenon, and hopefully one that will continue, the reasons for it remain obscure. Were they known, they might indicate directions for new preventive interventions applicable to all persons with diabetes. □

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Differences in Breast and Lung Cancer Mortality in the United States

Cancer, the second leading cause of death in the United States, will account for an estimated 462,000 deaths throughout the nation in 1985.[1] Cancer death rates vary by site, age and sex, as well as by geography. Nonetheless, lung cancer has been the No. 1 cause of cancer deaths for American males since the mid-1960s, while breast cancer has been the leading cause of female cancer mortality for almost 40 years. Current data, however, are indicating a shift in the historic positions breast and lung cancer have held among U.S. women.

The preceding issue of the *Statistical Bulletin* presented ominous data showing that lung cancer death rates will shortly exceed those for breast cancer among women 35-84 for the first time in American history.[2] Since World War II, the climb in female lung cancer death rates has been explosive while breast cancer death rates advanced only slightly. In this article, we compare 1979-81 breast and lung cancer death rates for white women, 35-74, on a state-by-state basis in the continental United States and including the District of Columbia. (Alaska and Hawaii have been excluded from this study because the small number of deaths precluded meaningful analysis.) This is the second in the new series to present regional statistics based on the 1980 population census and deaths that occurred in 1979, 1980 and 1981.

Breast cancer rates are those deaths assigned to International Classification of Diseases, Ninth Revision, Codes 174 and 175; the lung cancer rates include Codes 160-165, cancers of the respiratory and intrathoracic organs, over 95 percent of which are malignant neoplasms of the lung, trachea and bronchus. For purposes of this analysis, the diseases included in these codes will be referred to as lung cancer. Mortality rates are shown per 100,000 population in 10-year age groupings between 35 and 74 and for the ages 35-74 combined. The combined death rates have been age-adjusted because of differences in the age composition of state populations.

Breast Cancer

As shown in the accompanying table and Figure A, the 1979-81 breast cancer mortality rates among white women 35-74 varied considerably between regions of the country. Four of the nine geographic areas recorded rates above the average United States total of 51.5 per 100,000. The highest mortality was registered in the Middle Atlantic states (59.0 per 100,000), followed by the New England states (55.4). Respectively, these rates were 15 and 8 percent above the national rates. The lowest rate—42.7 per 100,000—was found in the East South Central area and was 17 percent below the U.S. total. The West South Central area recorded the second lowest breast cancer death rate, 16 percent below the total.

Mortality rates increased with age; the rate of increase was the greatest between the 35-44 and 45-54 age groups, where the rates almost tripled. The rate of increase slowed with each succeeding age category thereafter, with no apparent significant regional differences. The highest mortality was reported in the Middle Atlantic states in each age group and the lowest was seen in the East South Central area for all women and those aged 35-44 and 65-74. The West South Central states registered the lowest rates among white women between 45-54 and 55-64.

Variations in breast cancer death rates were more pronounced between individual states than between regions.

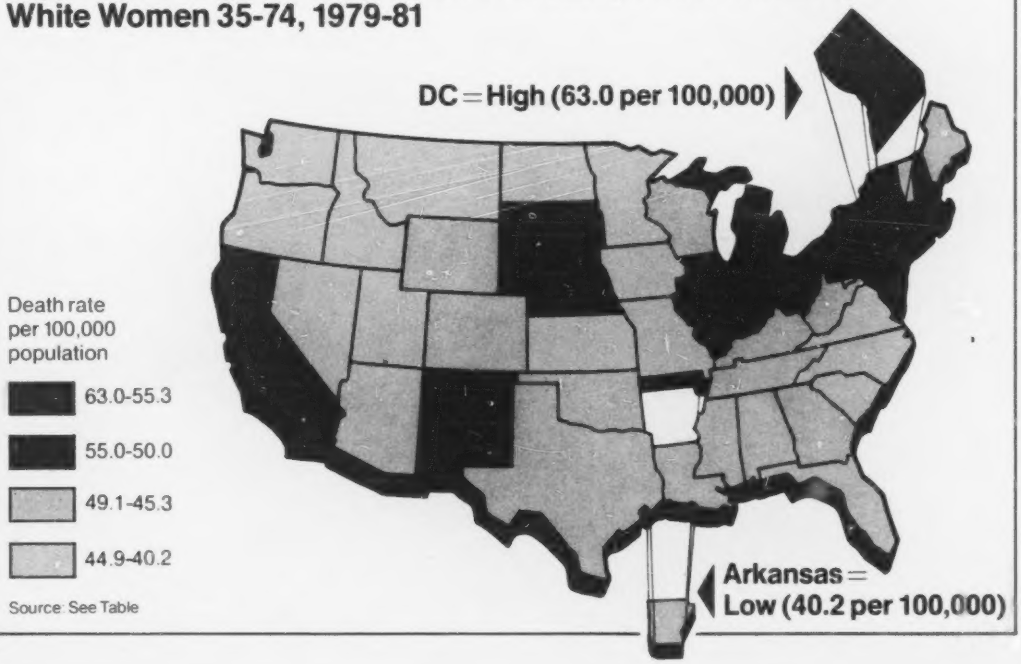
Variations in breast cancer death rates were more pronounced between individual states than between regions of the country. The highest breast cancer mortality rate among white women 35-74 years old was recorded in the District of Columbia and the lowest rate was recorded in Arkansas. There was a 57 percent difference between these high and low mortality rates; both rates differed by 22 percent from the national total.

Three other states registered death rates 15 percent or more above the U.S. average. New York, Delaware and New Jersey had the second, third and fourth highest breast cancer mortality during the period, with rates in excess of 60 per 100,000. Eight states recorded death rates 15 percent or more below the U.S. total for women 35-74. Texas had the eighth lowest mortality rate—43.5 deaths per 100,000—followed by West Virginia, Alabama and Mississippi with identical rates of 42.9 per 100,000, Louisiana, Georgia, Tennessee and finally Arkansas.

Substantial between-state variation was evident within the various age groups. South Dakota registered the highest rate among white women 35-44 (32.9)—a rate 86 percent above that for all women in this age group. Wyoming (data not shown) and Oregon registered the lowest breast cancer mortality among these women with rates of at least 33 percent below that for all American women 35-44.

Among white women 45-54, the highest mortality occurred in Delaware, with a rate almost 50 percent above the U.S. total. Vermont and Nevada registered the lowest rates for these women, 36.0 and 36.4 per 100,000, respectively.

Figure A—Geographic Variation in Breast Cancer Mortality White Women 35-74, 1979-81


DC = High (63.0 per 100,000)
Death rate per 100,000 population
63.0-55.3
55.0-50.0
49.1-45.3
44.9-40.2
Arkansas = Low (40.2 per 100,000)

Source: See Table

Mortality From Breast and Lung Cancer White Females Aged 35-74, United States, 1979-81

Area	Breast Cancer Death Rate per 100,000					Lung Cancer Death Rate per 100,000				
	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	51.5	17.7	49.2	80.9	105.2	42.0	6.8	34.0	75.2	107.6
New England	55.4	18.0	51.8	90.0	114.5	43.4	8.1	35.0	77.4	109.3
Maine	50.5	15.4	50.8	76.6	107.7	42.7	†	31.0	81.9	109.8
New Hampshire	52.5	19.1	42.0	99.4	96.2	46.3	†	41.3	77.6	110.5
Vermont	47.9	†	36.0	79.5	111.3	41.3	†	†	78.1	114.9
Massachusetts	57.7	18.3	53.7	93.5	121.1	42.7	7.8	35.8	75.2	106.2
Rhode Island	55.3	22.9	57.8	80.1	101.0	44.7	†	37.4	77.1	101.0
Connecticut	55.0	16.7	52.0	90.2	114.4	44.2	7.7	33.4	79.7	116.9
Middle Atlantic	59.0	19.9	56.7	92.3	122.2	42.0	7.4	32.7	72.5	113.2
New York	62.3	21.8	59.2	98.2	126.8	43.3	7.8	33.8	74.5	117.0
New Jersey	60.2	18.4	59.2	93.2	128.0	44.8	8.5	34.5	77.2	120.2
Pennsylvania	54.2	18.3	51.9	84.4	112.8	38.6	6.2	30.1	67.4	104.4
East North Central	53.7	18.0	50.7	84.2	113.3	40.9	6.4	34.0	72.3	104.7
Ohio	56.9	19.2	54.0	90.1	117.0	43.9	6.4	36.1	77.6	114.8
Indiana	51.6	18.9	48.1	80.7	105.6	42.3	6.3	33.7	78.8	106.3
Illinois	54.1	17.1	50.4	83.2	121.2	40.7	6.7	33.9	72.0	103.4
Michigan	52.0	18.1	50.3	81.0	105.2	41.9	6.3	35.0	75.5	105.4
Wisconsin	51.0	16.0	47.0	82.6	108.8	31.1	6.1	28.1	47.1	83.6
West North Central	48.7	17.0	47.5	73.1	102.1	33.8	5.9	29.0	60.8	81.3
Minnesota	48.8	16.8	47.2	71.1	107.6	29.8	5.0	23.8	53.9	76.1
Iowa	47.1	15.6	40.2	76.8	105.3	29.7	5.8	24.5	55.7	68.2
Missouri	48.7	17.3	50.2	74.7	92.1	41.4	6.2	33.7	77.4	101.4
North Dakota	46.8	†	42.5	69.2	103.4	20.4	†	†	31.7	59.1
South Dakota	56.0	32.9	52.2	75.0	99.9	30.8	†	34.1	46.5	63.7
Nebraska	53.8	16.2	58.0	73.7	118.4	30.7	†	31.7	46.5	75.5
Kansas	45.6	14.6	44.4	68.5	100.0	36.3	8.3	33.0	64.6	77.9
South Atlantic	47.0	16.8	46.2	72.3	93.6	42.7	6.5	34.7	79.4	105.2
Delaware	61.0	†	71.9	81.1	113.4	52.5	†	33.6	93.4	155.4
Maryland	56.1	23.0	53.7	86.5	107.1	48.9	6.0	36.4	91.8	131.9
District of Columbia	63.0	†	†	105.0	172.5	54.6	†	†	101.5	159.5
Virginia	47.9	17.2	48.4	72.3	94.1	44.2	7.1	33.3	78.6	120.4
West Virginia	43.4	13.5	39.7	69.5	94.8	43.9	†	38.0	87.1	97.7
North Carolina	45.4	17.8	44.8	68.5	88.3	33.3	5.6	30.8	61.6	72.5
South Carolina	45.5	15.0	39.1	76.4	97.6	37.2	†	31.6	71.7	86.8
Georgia	41.1	14.9	40.5	63.6	80.9	35.3	4.4	30.6	70.1	77.5
Florida	46.4	15.1	47.4	71.1	92.9	47.3	8.6	39.1	85.7	114.6
East South Central	42.7	15.7	43.1	67.4	78.7	39.5	7.5	36.5	69.7	89.1
Kentucky	44.9	15.2	48.1	69.3	82.0	46.9	10.4	46.0	78.6	101.6
Tennessee	40.8	14.0	38.7	69.4	75.3	36.7	6.8	31.4	70.1	80.4
Alabama	42.9	17.4	44.9	64.2	75.8	36.3	7.5	34.2	63.1	80.0
Mississippi	42.9	17.4	41.0	64.8	84.9	37.6	†	34.1	62.8	101.2
West South Central	43.1	16.2	41.7	66.8	84.2	41.3	5.8	33.8	75.6	105.1
Arkansas	40.2	15.7	40.3	61.1	76.1	36.6	†	28.8	68.7	93.3
Louisiana	42.2	14.9	41.5	65.4	83.6	44.6	6.8	34.6	81.3	116.9
Oklahoma	44.4	15.3	41.9	71.5	89.2	40.8	7.1	34.1	75.4	97.0
Texas	43.5	16.8	41.9	67.1	84.7	41.6	5.3	34.4	75.5	107.0
Mountain	47.4	16.2	44.6	76.5	95.6	35.9	4.5	27.0	67.5	95.4
Montana	48.1	18.5	47.2	74.0	92.8	35.1	†	29.3	58.8	101.6
Idaho	45.3	14.1	42.0	73.7	95.8	28.8	†	17.6	63.8	69.0
Wyoming	50.0	†	48.0	99.1	85.8	36.9	†	†	85.2	91.3
Colorado	44.0	13.7	40.7	70.6	95.3	30.8	†	26.4	52.9	84.7
New Mexico	51.6	25.4	48.1	70.4	104.5	32.4	†	25.0	56.5	94.9
Arizona	50.2	17.0	49.9	83.3	91.6	45.3	7.6	33.0	88.0	112.8
Utah	46.6	14.6	43.8	71.8	103.6	18.7	†	†	34.9	55.9
Nevada	45.8	16.4	36.4	80.0	96.6	58.1	†	48.9	104.8	148.6
Pacific	54.7	18.8	50.2	88.1	113.5	51.4	8.2	39.4	91.0	139.4
Washington	49.1	17.6	40.4	86.8	98.0	50.6	6.6	40.8	86.9	140.6
Oregon	46.0	11.8	40.8	77.3	105.0	49.5	8.6	43.3	88.4	117.6
California	57.0	20.2	53.3	90.1	117.1	52.0	8.5	39.1	92.0	141.8

*Adjusted on the basis of age distribution of United States total population, 1940.

†Fewer than 20 deaths; rate not computed.

Note: Alaska and Hawaii are excluded. See text on page 12.

Source: Basic data from the Division of Vital Statistics, National Center for Health Statistics.

The highest mortality rates for women 55-64 and 65-74— 105.0 and 172.5 per 100,000, respectively—were found in the District of Columbia. New Hampshire, Wyoming and New York each reported more than 98 deaths per 100,000 for women 55-64; New Jersey, New York, Illinois and Massachusetts reported deaths in excess of 120 per 100,000 for women 65-74. The lowest breast cancer mortality rate for white women 55-64 was reported in Arkansas, where 61.1 deaths per 100,000 were reported. Alabama and Tennessee registered the lowest mortality among the women aged 65-74.

Lung Cancer

The geographic distribution of lung cancer mortality rate differed from those for breast cancer. The Pacific area of the country recorded the highest rate (51.4 per 100,000), 22 percent above the average. The West North Central area recorded the lowest lung cancer mortality (33.8 per 100,000), almost 20 percent below the national total. The Pacific rate was more than 50 percent above that for West North Central states. Two other regions, i.e., New England and the South Atlantic, recorded rates higher than the national total.

The mortality rate quintupled between ages 35-44 and 45-54; more than doubled between the 45-54 and 55-64 year-old groups; and increased by 1.4 percent between the 55-64 and 65-74 age groups. Relatively minor regional variation in the amount of increase between age groups was evident across the country.

Lung cancer mortality was highest in the Pacific area for each of the four age groups presented, and lowest in the Mountain states for the women ages 35-44 and 45-54. For the oldest groups of women, the West North Central area recorded the lowest lung cancer mortality with a rate of 60.8 for women 55-64 and a rate of 81.3 per 100,000 for women 65-74.

As seen in Figure B, Nevada registered the highest lung cancer mortality (58.1 per 100,000 population) among white women 35-74. The District of Columbia recorded the second highest among these women, followed by Delaware, California and Washington, each registering rates above 50 per 100,000 population. Not surprisingly, Utah with its large Mormon population, registered the lowest female lung cancer mortality of all the states/districts studied. The Utah death rate (18.7 per 100,000) was 55 percent below the national total for women between 35 and 74, 8 percent below the second lowest rate reported in North Dakota, and 68 percent below the Nevada high. Idaho, Iowa and Minnesota each recorded mortality rates under 30 per 100,000.

For women 55-64, lung cancer mortality was highest in Nevada (104.8 deaths per 100,000) followed by the District of Columbia (101.5), Delaware, California and Maryland with rates at least 22 percent above the United States total. North Dakota and Utah were the two states in which the lowest rates were registered for this age group.

Utah, with its large Mormon population, reported the lowest female lung cancer mortality.

Among white women 65-74, the District of Columbia ranked No. 1 in lung cancer mortality with a rate of 159.5—almost 50 percent above the national total for this age group. Delaware and Nevada ranked second and third with rates of 155.4 and 148.6, respectively; Utah recorded the lowest lung cancer mortality among these women—55.9 deaths per 100,000, almost 50 percent below the total. North Dakota, South Dakota, Iowa and Idaho each recorded rates below 70 per 100,000.

Breast and Lung Cancer

As shown in Figure C, there was a wider range in the female lung cancer mortality rates (18.7

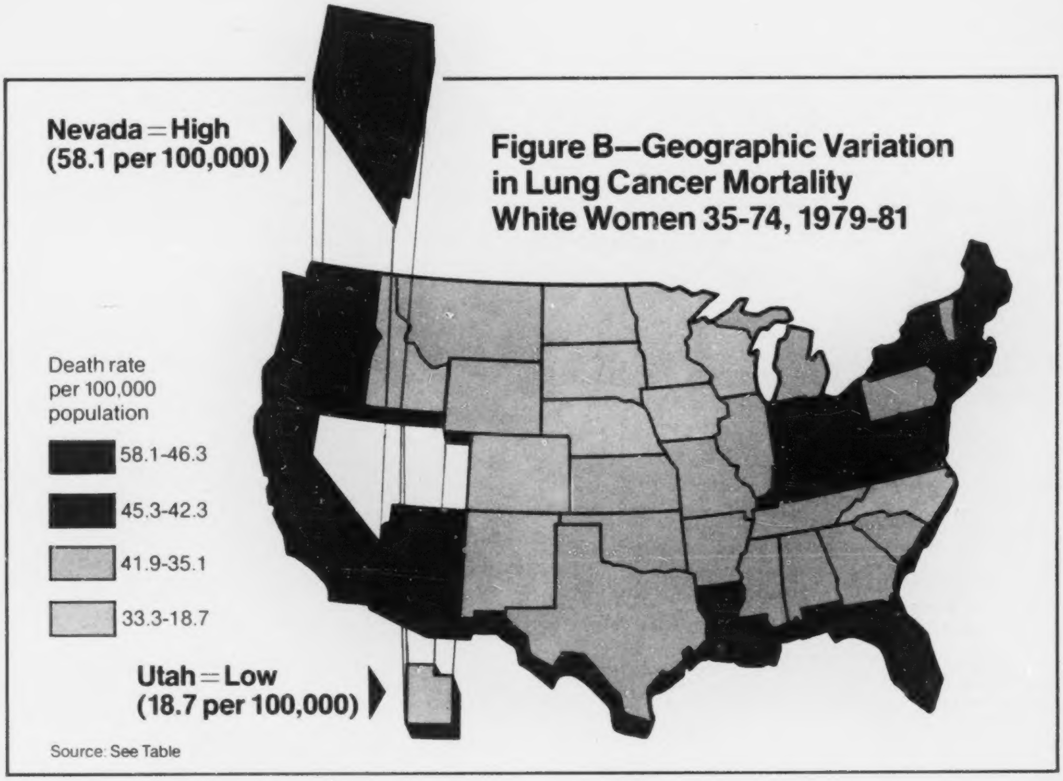


Figure B—Geographic Variation in Lung Cancer Mortality White Women 35-74, 1979-81

Nevada = High (58.1 per 100,000)

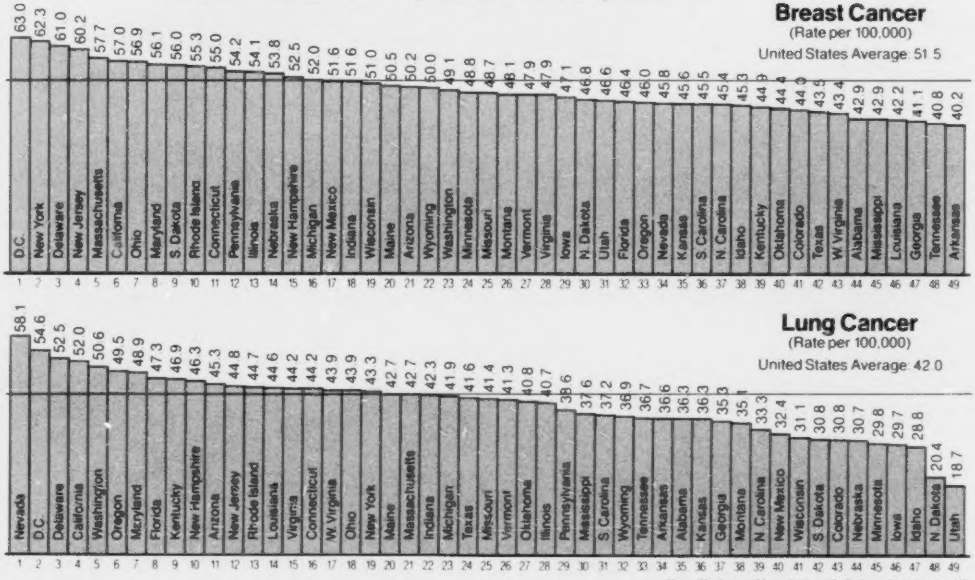
Utah = Low (18.7 per 100,000)

Source: See Table

to 58.1 per 100,000) than in the breast cancer rates (40.2 to 63.0 per 100,000). A 211 percent difference existed between the high and low lung cancer rates versus a 57 percent difference between these extreme rates for breast cancer. Twenty-two states registered lung cancer mortality in excess of the age-adjusted rate for the country (42.0 per 100,000) and 18 states recorded breast cancer deaths above the total rate of 51.5 per 100,000 population. Only four of the areas with the 10 highest breast cancer mortality rates were also among the 10 areas with the highest lung cancer rates. Conversely, only one of the 10 states with the lowest breast cancer death rates was among the 10 with the lowest lung cancer mortality.

Total breast cancer rates were 23 percent higher than those for lung cancer. When these data are analyzed by age groups, the results are startling. Breast cancer mortality remains higher through age 64 but drops below that of lung cancer among white women 65-74. Among the youngest group of these women, a 160 percent difference existed between breast and lung cancer mortality, whereas among the oldest group of white women, the difference was a 2 percent drop. Twenty-seven states recorded higher lung than breast cancer mortality among this older group of women. Four of the nine geographic areas (e.g., South Atlantic, East South Central, West South Central and Pacific) registered higher lung cancer than breast cancer mortality in *both* the 55-64 and 65-74 age groups. In addition, three states, Washington, Oregon and Nevada, recorded lung cancer rates higher than breast cancer rates among women in three age groups, i.e., 45-54, 55-64 and 65-74.

Figure C—Age-Adjusted Death Rates for Breast Cancer and Lung Cancer
White Women 35-74, United States, 1979-81



Note: Alaska and Hawaii are excluded, see text on page 12

Lung Cancer Overtaking Breast Cancer

Recent reports predict that lung cancer death rates will overtake those from breast cancer among women for the first time in American history. The data presented here indicate such a situation was evident between 1979-81 among American women 65-74 and in certain other age groups and areas of the country as well. The geographic distribution of these two diseases suggests environmental and etiologic differences. The low lung cancer rates in Utah women reflect the Mormon proscription of tobacco use. Lung cancer is higher in urban and industrialized areas as well as in areas of traditionally high in-migration. The well-known correlation between urban living and cigarette smoking now appears to include females for the first time.

As women who began smoking during the 1940s continue to age, their lung cancer mortality rate will continue to increase. However, it is unlikely that female lung cancer mortality rates will ever reach those among males because of the differences between the sexes in the smoking habit. Nevertheless, these lung cancer mortality rates for both sexes are unacceptable in this age of preventive medicine, heightened health awareness and consumer responsibility in health care. ☐

References

[1] American Cancer Society. *1985 Cancer Facts and Figures.* New York, N.Y.: American Cancer Society, 1985.

[2] "Mortality trends in lung and breast cancer in women." *Statistical Bulletin.* 4-6, Jul-Sep. 1985.

Capsule Briefs

are timely literature selections with broad reader interest.

Smoking and Fertility

Women who smoked had fertility levels that were only 72 percent of nonsmokers, according to this epidemiologic study conducted by researchers at the National Institute of Environmental Health Sciences. They queried 678 pregnant women about their contraceptive cycles and their smoking histories. Smokers were 3.4 times more likely to have taken more than a year to conceive than nonsmokers. Heavy smokers were less fertile than light smokers. (D.D. Baird and A.J. Wilcox, *JAMA*, 253:2979-2983, 1985.) ☐

Healthier Hearts

This occupational health research at DuPont Company may help explain whether the recent significant national decline in coronary heart disease (CHD) deaths has resulted from fewer new cases or rather from lower death rates in existing cases. In covering 27 years, the new-case rate declined first, and the case fatality rate went down also, but only after the first trend was well established. In this sizable work force, the authors concluded that the major source of the CHD death rate decline was the reduction in new cases. (S. Pell and W.E. Fayerweather, *New England Journal of Medicine*, 312:1005-1011, 1985. Also see related editorial 312:1053-1055.) ☐

On Montezuma's Revenge

Travelers abroad, particularly to tropical climates and lesser developed countries, who hope for a simple solution to the nagging problem of diarrheal conditions, will take interest in this article. Using the experience of 35 arriving Peace Corps Volunteers (PCV) in Thailand as subjects, it was found that 20 (57 percent) had 30 bouts of diarrhea in their first six weeks in the country. After performing stool exams on each PCV, regardless of symptoms, on days 1, 20, and 39, a total of 10 different enteric pathogens were identified, though in 57 percent of cases a single pathogen was at work. Enterotoxic *Escherichia coli* was present most often—in some 37 percent of the total cases. (Since therapy follows precise diagnosis, sufferers will generally require careful clinical workups before adequate treatment may occur. Ed.) (D. Taylor, *et al*, *Lancet* 1:381-383, 1985.) ☐

Shrinkage on the Upswing

When Diagnostic Related Groups (DRGs) were made the basis for Medicare's flat-fee type reimbursement formula for hospital care, psychiatric conditions were exempted. This policy, intended to prevent unfair application of the DRG technology to an area of medical care that is difficult to codify for reimbursement, has had inadvertent consequences: admissions to psychiatric hospitals have risen about 25 percent since DRGs were introduced (October, 1983), and charges are projected to rise from $3.0 billion to $7.2 billion by 1988. (It seems time for government officials to go back to the drawing board. Ed.) (R. Teitelman, *Forbes*, p. 174, June 17, 1985.) ☐

Stress Not a Factor in Children's Blood Pressure

A group of University of Minnesota investigators sought, but could not find, an epidemiological relationship between stress in 1,505 school children aged 6 to 9 (as measured by recent life events) and their blood pressure levels, particularly elevations. This article contains an interesting frequency distribution, however, of the responses of these children's parents to the Life Events Questionnaire—a frequently used research instrument to measure stress in population studies. For example, 10.7 percent had parents who separated in the preceding 12 months. (R.F. Gillum, *et al*, *Journal of Chronic Disease*, 37:839-851, 1984.)□

Demon Rum and Youth on the Road

Raising the drinking age in Massachusetts from 18 to 20 years in 1979 has apparently reduced the nonfatal auto crashes in 16- and 17-year-olds significantly compared to New York State which had no comparable restriction during the time of the study. No decline in single-vehicle, nighttime fatal crashes was observed, however. The authors conclude that during the study period 1979-81 the changes in drinking behavior in 16- and 17-year-olds was minimal, if one used these auto crash indicators. (Not discussed was the effect of younger legal drinking ages in surrounding states, during the study time period, undoubtedly an important, but unmeasured factor in teenage alcohol accessibility. Ed.) (R.A. Smith, *et al*, *Journal of Studies on Alcohol*, 45:534-539, 1984.)□

Nuclear Winter Ocean—Atmospheric Effects

Nothing, it seems, is ever simple, even when it is as complex as simulating the tragic effects of multiple, simultaneous nuclear explosions on the earth's atmosphere, causing "nuclear winter." In this letter to the editor, the author poses the effects of these explosions on ocean currents through atmospheric-pollution. He cites evidence from volcanic eruptions indicating that, in addition to the other complications from nuclear devastation, the ocean current changes (e.g., El Nino) would bring unusual warming trends and storminess to affected global regions. (A.E. Strong, *Science*, 228:792, 1985.)□

Cloves as a Risk Factor

Sometimes the best prevention programs occur before an epidemic happens; these two case studies surely prompt that wish. According to the Centers for Disease Control, use of clove cigarettes was reported in 12 cases of severe illnesses—March 1984 to May 1985. This article provides clinical summaries of two adolescent males who smoked clove cigarettes and developed severe, acute chest diseases requiring hospitalization. In each case, it appeared the symptoms resulted from toxic rather than infectious reactions. (If cloves as an additive represent part of a new strategy by tobacco companies to increase their market share, we suspect another cigarette-induced epidemic may be in the making. Ed.) (*Morbidity and Mortality Weekly Report*, 34:297-299, 1985.)□

Mortality from Respiratory Cancer Continues to Rise Internationally

The rising toll of mortality from respiratory cancer, especially among women, is a growing international concern. Between 1976 and 1981 mortality from this cause in the United States and Canada rose significantly among women, whereas the increase among men was much lower. Among men, in most of the industrialized countries of Western Europe periodically studied by the Metropolitan Life Insurance Company, death rates from respiratory cancer declined slightly. However, the death rate in women from cancer of the respiratory system increased in all of the Western European nations. In the United States the number of deaths from respiratory cancer among women is on a par with, or already has exceeded, the mortality toll from breast cancer.[1]

> In the United States the number of deaths from respiratory cancer among women is on a par with, or already has exceeded, the mortality toll from breast cancer.

This is the third and last article in the current series of analyses comparing mortality rates from specific causes of death in the United States with those in Canada and selected countries in Western Europe.[2,3] Malignant neoplasms of the respiratory and intrathoracic organs (International Classification of Diseases, Ninth Revision, Codes 160-165) is the group of diseases commonly referred to as respiratory cancer. The codes notwithstanding, the predominant causes of death discussed in this report are malignant neoplasms of the trachea, bronchus and lung—Code 162—which will be referred to as lung cancer. In the United States they represent virtually all of the deaths from the major category. In order to make comparisons valid, death rates for men and women aged 35-74 have been adjusted for the differences in each country's age distribution.

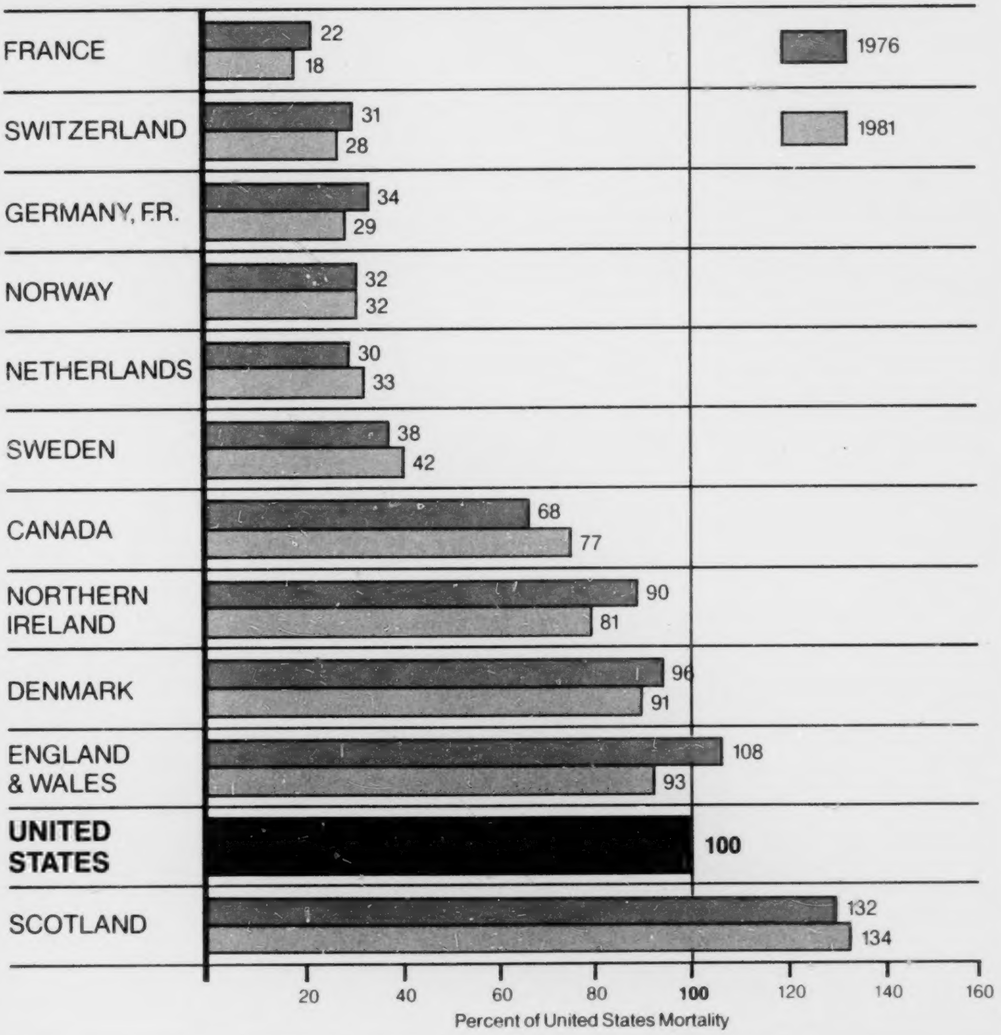
Mortality rates in the United States can be reasonably compared with the weighted average death rate for the group of industrialized countries of Western Europe—United Kingdom, France, Germany and Switzerland. These nations, as an entity, closely resemble the United States in population size, geographic diversity, degree of industrialization, variety of ethnic and cultural stock and range of socioeconomic conditions. However, it is also quite common to compare the mortality rates in the United States with those in individual countries such as Canada, Sweden, Denmark or the Netherlands.

Alarming Rise Among Women

The substantial rise in mortality from lung cancer among women is a cause for alarm. For women 35-74 years old, the age-adjusted death rate in Canada increased by 46 percent between 1976 and 1981, and in the United States the comparable rise was 29 percent. The

> The substantial rise in mortality from lung cancer among women is a cause for alarm.

Figure A—Relative Mortality From Cancer of the Trachea, Bronchus and Lung Among Women Aged 35-74 United States Compared With Selected Countries, 1976 and 1981
(In 1981 Rank Order)



increase in mortality during this period was also high in the Scandinavian countries and the Netherlands—namely, 33 percent. Only in the block of other highly industrialized countries of Western Europe was the increase in the death rate relatively small— 11 percent. In 1981 the mortality rate from lung cancer among women aged 35-74 was 32 per 100,000 in Canada and was somewhat higher in the United States at 42 per 100,000. The mortality rate in the group of industrialized Western European nations, and in the block of Scandinavian countries and the Netherlands, was only about half the magnitude of the rate in the United States.

The recent trends in mortality from lung cancer have not materially shifted the gap in mortality levels between the United States and the groups of countries for which comparative mortality is analyzed. For instance, the disparity in mortality rates between women in the United States and their contemporaries in the block of highly industrialized Western European countries widened somewhat, but the differences narrowed in Canada and in the group of Scandinavian countries and the Netherlands. Thus, in 1981 the death rate for women residing in Western Europe was just 47 percent of that in the United States, whereas the relative number was 54 in 1976. On the other hand, the ratio of mortality rates rose from 68 to 77 for Canada, and although still markedly lower than for the United States, increased from 43 to 45 in the Scandinavian countries and the Netherlands.

Analysis of lung cancer death rates among individual countries reveals that for women aged 35-74, mortality was highest in Scotland (56 per 100,000) and was exceptionally low in France (8 per 100,000). The low mortality rate reported for France may be an artifact resulting from conflicting international reporting procedures. In Switzerland and the Federal Republic of Germany, the death rate from lung cancer in 1981 was around 12 per 100,000, was not much higher in Norway and the Netherlands, rose to around 18 in Sweden, but then jumped into the 30s for the remainder of the nations not already mentioned.

Age-adjusted Rates Among Women

Figure A is a graphic presentation of the age-adjusted female mortality rates in individual countries compared with the United States. It is evident that women in the United States lost ground to those in France, Switzerland, Germany, Northern Ireland, Denmark, and England and Wales. In Norway, the 1981 mortality rate from lung cancer was 32 percent of that in the United States—the same relative number as in 1976. The increase in the death rate for women in the United States was not as rapid as that for women in the Netherlands, Sweden, Canada and Scotland—resulting in a widening of the mortality differentials. In 1981 Scotland had the dubious distinction of being the only nation in which the death rate from lung cancer was higher than that in the United States—more than 30 percent; in 1976 Scotland and England and Wales were the only countries in this unfavorable category.

In 1981 Scotland was the only nation in which the death rate from lung cancer was higher than that in the United States.

Figure B—Relative Mortality From Cancer of the Trachea, Bronchus and Lung Among Men Aged 35-74 United States Compared With Selected Countries, 1976 and 1981
(In 1981 Rank Order)

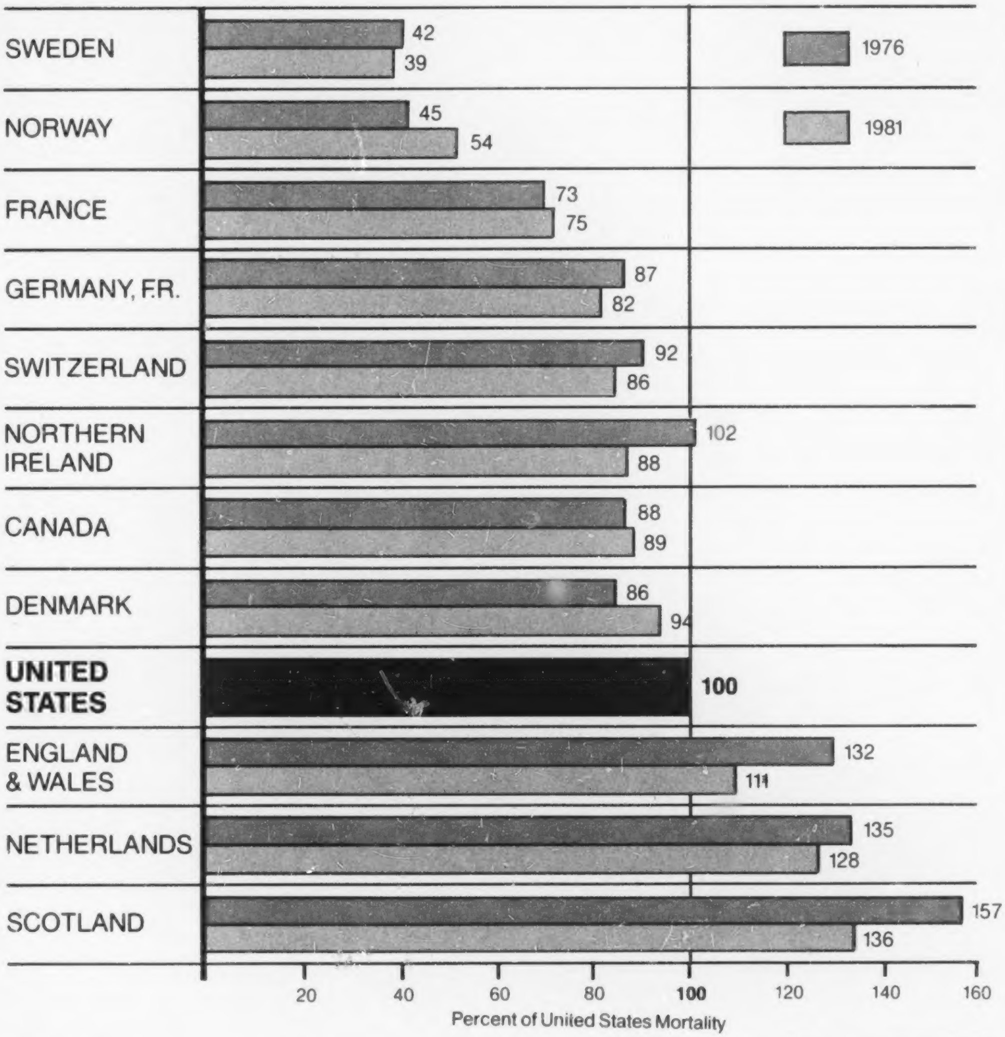


Table 1—Mortality from Cancer of the Trachea, Bronchus and Lung Among Men in Selected Countries—1976 and 1981

Death Rate per 100,000

	1976					1981				
Country	**Ages 35-74***	**Ages 35-44**	**Ages 45-54**	**Ages 55-64**	**Ages 65-74**	**Ages 35-74***	**Ages 35-44**	**Ages 45-54**	**Ages 55-64**	**Ages 65-74**
United States										
White	**113.9**	12.8	69.3	198.3	372.8	**117.9**	10.6	71.2	203.4	398.4
All Other	**147.7**	21.3	119.7	278.8	362.1	**160.5**	20.2	116.3	295.9	447.2
Total	**117.3**	13.8	74.7	205.8	371.8	**122.4**	11.8	76.4	212.6	403.1
Canada	**103.1**	8.1	55.8	179.7	364.2	**108.7**	8.7	57.2	197.0	375.1
Denmark	**100.4**	3.7	54.9	165.9	380.5	**115.0**	3.9	49.7	210.4	435.2
Norway	**52.5**	2.9	32.3	94.2	175.3	**65.9**	4.5	36.6	108.6	242.9
Sweden	**48.9**	4.4	22.4	78.4	192.4	**47.2**	4.2	24.9	79.0	172.5
Netherlands	**158.6**	9.3	65.0	274.4	623.8	**156.6**	9.7	62.7	252.8	647.7
Weighted Average	**103.2**	6.4	47.1	169.4	380.1	**106.8**	6.6	47.4	173.5	401.2
United Kingdom										
England and Wales	**155.3**	10.9	74.4	269.6	577.5	**135.9**	7.6	59.4	233.7	529.0
Northern Ireland	**119.5**	11.0	55.3	226.2	410.5	**107.6**	6.8	53.0	188.8	395.7
Scotland	**184.1**	14.2	85.0	317.7	692.1	**167.0**	13.1	70.1	267.7	644.9
France	**85.5**	11.7	56.2	144.3	271.3	**92.0**	12.1	63.7	153.3	289.0
Germany, Federal Republic	**102.3**	7.4	47.4	170.0	396.8	**100.3**	[illegible].9	51.0	159.0	382.9
Switzerland	**107.6**	8.7	71.1	181.6	357.7	**105.1**	8.7	54.2	195.5	356.6
Weighted Average	**115.2**	9.7	59.7	202.3	420.1	**110.2**	9.9	57.7	187.5	408.1

*Adjusted on basis of age distribution of the U.S. total population, 1940.
Note: France data for 1981 not available; 1980 figures used.
Source of basic data: *World Health Statistics Annual* and various government annual reports.

Male Experience More Favorable

Contrary to the distressing mortality experience among women, the trend among men is very encouraging. Between 1976 and 1981 the age-adjusted death rate from lung cancer for men 35-74 years of age decreased in seven of the 10 Western European countries and rose by only 4 percent in the United States and 5 percent in Canada. Somewhat larger death rate increases were recorded in France and Denmark, while a significant rise occurred in Norway.

Substantial international disparities exist in lung cancer mortality rates. In 1981 the death

Table 2—Mortality from Cancer of the Trachea, Bronchus and Lung Among Women in Selected Countries—1976 and 1981

Death Rate per 100,000

	1976					1981				
Country	**Ages 35-74***	**Ages 35-44**	**Ages 45-54**	**Ages 55-64**	**Ages 65-74**	**Ages 35-74***	**Ages 35-44**	**Ages 45-54**	**Ages 55-64**	**Ages 65-74**
United States										
White	**32.6**	6.4	28.2	60.2	72.8	**41.9**	6.2	32.8	75.8	110.8
All Other	**30.9**	8.0	32.0	51.1	60.9	**40.3**	7.7	37.7	74.8	83.1
Total	**32.5**	6.6	28.6	59.3	71.7	**41.8**	6.4	33.4	75.6	108.1
Canada	**22.0**	4.2	18.2	39.7	52.9	**32.2**	5.4	25.8	58.2	81.9
Denmark	**31.1**	8.3	25.4	46.5	85.3	**38.1**	4.4	34.3	68.7	93.8
Norway	**10.5**	1.5	7.9	18.1	30.1	**13.3**	1.7	12.0	20.5	37.9
Sweden	**12.4**	2.6	8.2	21.9	35.1	**17.6**	3.3	12.2	31.3	49.0
Netherlands	**9.6**	1.7	8.7	13.8	27.6	**13.7**	2.7	13.3	22.0	32.6
Weighted Average	**14.1**	3.0	11.2	22.4	40.2	**18.8**	3.0	16.3	32.2	48.7
United Kingdom										
England and Wales	**35.1**	4.8	26.7	64.4	94.1	**38.7**	4.2	23.7	73.2	117.2
Northern Ireland	**29.3**	6.1	17.9	62.7	68.1	**33.9**	3.4	21.0	72.2	89.8
Scotland	**42.8**	6.4	37.1	78.7	101.8	**55.9**	6.9	36.7	107.0	158.8
France	**7.3**	1.9	4.8	11.9	21.4	**7.7**	1.3	6.4	11.7	22.8
Germany, Federal Republic	**11.1**	1.8	6.9	18.9	34.9	**12.3**	1.9	8.8	19.2	38.9
Switzerland	**10.1**	1.5	8.7	16.8	27.1	**11.6**	2.9	7.2	19.7	34.0
Weighted Average	**17.7**	2.7	12.6	33.2	49.4	**19.7**	2.6	12.8	36.3	60.2

*Adjusted on basis of age distribution of the U.S. total population, 1940
Note: France data for 1981 not available; 1980 figures used.
Source of basic data: *World Health Statistics Annual* and various government annual reports.

rate among men was only 47 per 100,000 in Sweden, followed by 66 per 100,000 in Norway and 92 per 100,000 in France. For the balance of the countries in this analysis, the age-adjusted death rate from lung cancer was 100 per 100,000 or higher. The mortality rate per 100,000 was 122 in the United States, 136 in England and Wales, 157 in the Netherlands, and as much as 167 in Scotland (3½ times that of Sweden).

Figure B compares the U.S. male age-adjusted death rate from lung cancer with that of their contemporaries in individual countries. As it shows, men aged 35-74 in England and

Wales, the Netherlands and Scotland continue to experience relatively higher mortality; but as a result of their more rapidly declining death rates, the differential has narrowed. Other countries in which the male mortality rate decreased faster than in the United States include Northern Ireland, Germany, Switzerland and Sweden. Between 1976 and 1981 the mortality ratio increased in Norway, although it still is just about half that in the United States. In France, the 1981 male death rate is three-fourths the rate in the United States—just slightly higher than in 1976. During this 5-year period, the gap in the mortality disparity closed slightly in Canada and has been nearly eliminated in Denmark.

> With the exception of France, in 1976 and 1981, women recorded a larger increase in lung cancer death rates than did men—dramatically higher in some countries.

Increases With Age

Mortality from lung cancer increases rapidly with advance in age. Among men in the United States, the 1981 death rate per 100,000 rose from 12 at ages 35-44 to 76 at ages 45-54 to 213 at ages 55-64 and to 403 per 100,000 at ages 65-74. This progression in death rates was experienced in the other countries, and also occurred among women.

Between 1976 and 1981, with the exception of France, women recorded a larger increase in lung cancer death rates than did men (dramatically higher in some countries). Nonetheless, death rates among females were still a fraction of that of males. For persons aged 35-74, in 1981, the mortality rate for women in the United States was one-third the size of the rate for men. However, this was the second highest percentage, exceeded only by the experience in Sweden. On the other hand, in France, and in the Netherlands, the female mortality rate was less than one-tenth the rate for males. For the group of highly industrialized countries of Western Europe and the Scandinavian countries and the Netherlands, the death rate for lung cancer among men was almost six times as high as that for women. The ratio diminished to 3 to 1 in Canada. Tables 1 and 2 present, for males and females separately, the age-specific mortality rates from lung cancer. □

References

[1] "Mortality trends of lung and breast cancer in women." *Statistical Bulletin* 66:4-9, Jul-Sep 1985.

[2] "Continued decline in mortality in the United States, Canada and Western Europe." *Statistical Bulletin* 66:9-13, Jan-Mar 1985.

[3] "Current trends in international mortality from diseases of the circulatory system." *Statistical Bulletin* 66:18-23, Apr-Jun 1985.

Regional Variations in Costs of Tonsillectomy and Adenoidectomy

Tonsillectomy and adenoidectomy surgery (T&A) historically has been one of the most frequently performed major childhood operations. These surgeries have been growing fewer in number in the United States and other developed countries for more than two decades, however, and American T&A rates are decreasing faster than the decline in the childhood population.[1,2,3] In 1983, 424,000 T&A surgeries were performed in short-stay nonfederal hospitals across the United States—a 48 percent decrease from the number of such surgeries registered in 1974.[4] The majority of these surgeries are performed on persons under 18 years old and are more frequently performed on females (56 percent in 1983).

In 1974 a tonsillectomy and adenoidectomy operation was the third most frequently performed surgery across the country; T&A dropped to fifth place in 1978, to 10th place in 1980 and below 10th, thereafter.[4] The rate is down from 3.9 per 1,000 population to 1.8 over these 10 years. Nonetheless, T&As remain one of the most commonly performed surgical procedures among children in this country, and the justification for these operations continues to generate controversy, concern and study.

Metropolitan Life Study

Based on group health insurance total claims paid by the Metropolitan Life Insurance Company, Corporate Health Strategies, Inc., linked hospital and physician claims for T&As, including charges and length of stay. The study group consisted of 9,183 typical[*] T&A surgeries performed between January 1, 1982 and June 30, 1983, on employees and dependents insured under Metropolitan Life group health contracts across the United States. Average medical and surgical fees, and billed hospital charges, are presented in this analysis by state and region of the country.

The characteristics of this study group paralleled those of the national data. The surgeries were performed on patients ranging from 1 to 64 years old. The median age was 10, and nearly one-third of the T&As were performed on children 6 years old or younger. The vast majority of patients (73 percent) were under 18 years old; 17 percent were between the ages of 18 and 29. More than half (58 percent) of the surgeries were performed on females.

Presentation of claims data is restricted to the 23 states in which more than 100 T&As were performed on persons under 18; these data represent 81 percent of the reported cases. As seen in Table 1, there was considerable variation in the regional distribution of T&As. Twenty-one percent of the surgeries were performed in the East North Central area of the country and only 5 percent occurred in the New England states. The distribution of these operations by age of patient did not differ significantly by region or state, however.

Cost Variation by Age of Patient

The average total charge for a T&A performed on patients under 18 years old was $1,370, 13 percent or $200 less than that charged for the older group of patients. Some regional variations occurred in the amount of this difference but by and large they were relatively insignificant. The difference approximated the national difference in the majority of the states; New York, Utah, West Virginia, Virginia, Illinois,

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[*] "Typical" surgeries are defined as those that fall within 97.2 percent of the usual length of stay criteria contained in the diagnosis related group (DRG) code

Table 1—Regional Distribution of Tonsillectomy and Adenoidectomy Procedures*
January 1, 1982–June 30, 1983

Geographic Area	Age				Total	
	17 and younger		18 and over			
	Number	Percent	Number	Percent	Number	Percent
United States	6,700	73.0	2,483	27.0	9,183	100.0
New England	316	4.7	147	5.9	463	5.1
Connecticut	105	1.6	56	2.3	161	1.8
Massachusetts	125	1.9	61	2.5	186	2.0
Middle Atlantic	625	9.3	247	9.9	872	9.5
New York	191	2.8	96	3.9	287	3.1
Pennsylvania	346	5.2	86	3.5	432	4.7
East North Central	1,409	21.0	483	19.4	1,892	20.6
Illinois	323	4.8	124	5.0	447	4.9
Indiana	249	3.7	79	3.2	328	3.6
Ohio	544	8.1	181	7.3	725	7.9
Wisconsin	200	3.0	57	2.3	257	2.8
West North Central	620	9.3	181	7.3	801	8.7
Iowa	176	2.6	42	1.7	218	2.4
Missouri	238	3.6	83	3.3	321	3.5
South Atlantic	1,143	17.1	437	17.6	1,580	17.2
Florida	199	3.0	108	4.3	307	3.3
Georgia	315	4.7	101	4.1	416	4.5
North Carolina	193	2.9	78	3.1	271	3.0
Virginia	102	1.5	51	2.1	153	1.7
West Virginia	111	1.7	16	.6	127	1.4
East South Central	628	9.4	184	7.4	812	8.8
Alabama	130	1.9	39	1.6	169	1.8
Kentucky	136	2.0	53	2.1	189	2.1
Tennessee	264	3.9	60	2.4	324	3.5
West South Central	1,139	17.0	436	17.6	1,575	17.2
Louisiana	325	4.8	97	3.9	422	4.6
Texas	633	9.4	264	10.6	897	9.8
Mountain	430	6.4	143	5.8	573	6.2
Colorado	102	1.5	42	1.7	144	1.6
Utah	109	1.6	28	1.1	137	1.5
Pacific	390	5.8	225	9.1	615	6.7
California	337	5.0	203	8.2	540	5.9

*Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company.
Source: Claims data from Metropolitan Life Insurance Company, merged and edited by
Corporate Health Strategies, Inc.; analysis by Health and Safety Education Division personnel.

Tennessee and Connecticut, however, recorded charges 20 percent or more for a T&A performed on an older person than for the same procedure on a patient 17 years old or younger.

Across the country, when age of patient was considered, average physician charges differed by only $20 for these operations, e.g., $390 for pediatric patients (17 and under), and $410 for those older. Because costs of T&A surgery differed more significantly by geography than by the patient's age at the time of the operation, the claims data were combined and results analyzed for *all* T&As, regardless of age.

Regional Variation in T&A Costs

According to Metropolitan Life statisticians, the average total charge for a T&A in the United States was $1,430, with considerable variation between regions (Figure, page 31). The lowest total cost was $1,270 recorded in the Mountain region, and this amount was 11 percent below the national average. The highest cost, $1,740, was reported in the Pacific region and was largely due to charges from California. The Pacific average total charges were 22 percent above the national total and 37 percent above the lowest regional costs. It seems noteworthy that the regions with the highest and lowest charges for T&A have such close geographic proximity. The second highest average total cost was reported in the West South Central area ($1,500), but these charges represented only a 5 percent increase.

> Between 1982 and mid-1983, the average total charge for a T&A was $1,430, with considerable variation between regions.

State Variation in Costs

As seen in Table 2, substantial variation in charges for T&As was evident between individual states. There was a 74 percent difference in total charges between the high cost reported in California ($1,810) and the low cost reported in Utah ($1,040). The California charges were 27 percent higher than the national average whereas the Utah charges were 27 percent lower. States with charges 10 to 20 percent above the U.S. average were Florida, Illinois and Massachusetts. Average total charges were 14 to 22 percent below the national total in Kentucky, Iowa, Wisconsin, North Carolina and Indiana, where the costs were $1,110, $1,200, $1,220, $1,230 and $1,230, respectively.

> There was a 74 percent difference in total T&A charges between the high cost in California ($1,810) and the low cost in Utah ($1,040).

Physician Charges

The average physician (medical and surgical) cost was $400 across the country, representing 28 percent of the total T&A bill. These charges

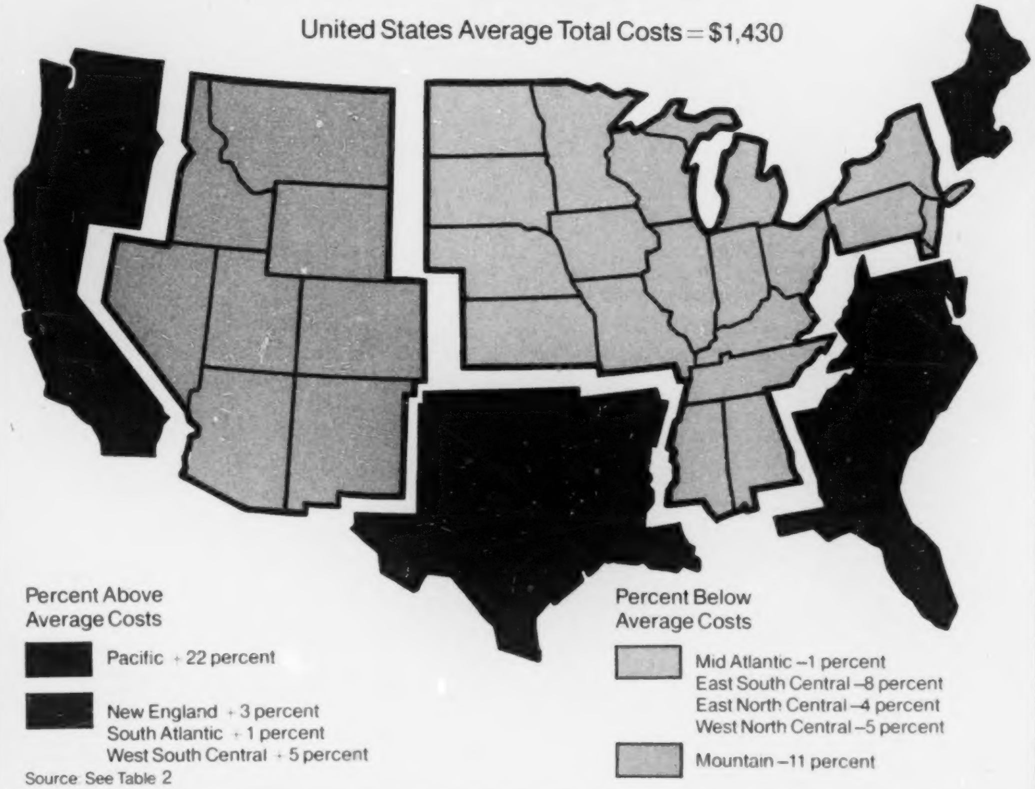
Table 2—Regional Variation in Charges for Tonsillectomy and Adenoidectomy*

January 1, 1982—June 30, 1983

	Average Costs ($)						Percentage	
Geographic Area	Total Hospital & Physician	Hospital Charge			Physician Charge	Average Length of Stay	Hospital of Total	Ancillary of Hospital
		Total	Room & Board	Ancillary				
United States	1,430	1,030	300	730	400	1.85	72	71
New England	1,480	1,080	350	730	400	1.90	73	68
Connecticut	1,470	1,020	350	670	450	2.02	69	66
Massachusetts	1,580	1,170	360	810	410	1.78	74	69
Middle Atlantic	1,410	990	300	690	420	1.65	70	70
New York	1,340	880	310	570	460	1.63	66	65
Pennsylvania	1,480	1,110	310	800	370	1.71	75	72
East North Central	1,370	1,000	310	690	370	1.78	73	69
Illinois	1,690	1,250	380	870	440	1.95	74	70
Indiana	1,230	880	270	610	350	1.78	72	69
Ohio	1,300	940	290	650	360	1.67	72	69
Wisconsin	1,220	900	280	620	320	1.87	74	69
West North Central	1,360	1,020	300	720	340	1.89	75	71
Iowa	1,200	860	310	550	340	1.94	72	64
Missouri	1,470	1,120	310	810	350	1.91	76	72
South Atlantic	1,440	1,040	280	760	400	1.96	72	73
Florida	1,720	1,230	300	930	490	1.97	72	76
Georgia	1,420	1,030	250	780	390	2.01	73	76
North Carolina	1,230	910	260	650	320	2.07	74	71
Virginia	1,460	1,080	280	800	380	1.78	74	74
West Virginia	1,510	1,110	300	810	400	1.99	74	73
East South Central	1,310	960	260	700	350	2.03	73	73
Alabama	1,430	1,080	260	820	350	2.09	76	76
Kentucky	1,110	760	270	490	350	1.86	68	64
Tennessee	1,350	1,020	270	750	330	2.06	76	74
West South Central	1,500	1,050	260	790	450	1.95	70	75
Louisiana	1,500	1,070	230	840	430	1.87	71	79
Texas	1,530	1,070	280	790	460	2.02	70	74
Mountain	1,270	920	270	650	350	1.59	72	69
Colorado	1,330	940	290	650	390	1.52	71	69
Utah	1,040	770	250	520	270	1.54	74	68
Pacific	1,740	1,260	390	870	480	1.70	72	69
California	1,810	1,310	400	910	500	1.72	72	69

*Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company

Source: Claims data from Metropolitan Life Insurance Company, merged and edited by Corporate Health Strategies, Inc., analysis by Health and Safety Education Division personnel.



Tonsillectomy and Adenoidectomy Charges by Geographic Region, January 1, 1982-June 30, 1983

United States Average Total Costs = $1,430

Percent Above Average Costs
Pacific +22 percent
New England +3 percent
South Atlantic +1 percent
West South Central +5 percent
Percent Below Average Costs
Mid Atlantic –1 percent
East South Central –8 percent
East North Central –4 percent
West North Central –5 percent
Mountain –11 percent

Source: See Table 2

ranged from $500 in California to $270 in Utah, 28 and 26 percent of the total cost, respectively. New York, Texas and Florida each reported relatively high physician charges (15 to 23 percent above the average for the United States). The New York physician charge comprised 34 percent of the total T&A bill—the highest proportional charge among the states in the study.

Hospital Charges

On average, 72 percent of the cost of a T&A was attributed to hospital charges (ancillary and room and board fees). By state, this proportion of the charges ranged from 76 percent in Missouri, Alabama and Tennessee to 66 percent in New York. The average hospital charges were 20 percent or more above the

U.S. average in California and Illinois, whereas in Kentucky and Utah, the hospital costs were at least 25 percent below.

The majority of the hospital bill (71 percent) was for the provision of ancillary services, i.e., laboratory work, operating and recovery room fees, anesthesia, etc. These charges typically ran two to three times the costs of room and board with wide between-state variation evident. In Louisiana, for example, ancillary service charges were 79 percent of the hospital bill compared with 64 percent in Iowa and Kentucky. The average ancillary charges were the highest in Florida and California, $930 and $910, respectively, which were more than 20 percent above the national average. In contrast, Kentucky, Utah, Iowa and New York reported ancillary charges of $490, $520, $550 and $570, respectively, 22 percent or more below the norm.

Regional variation in charges was fairly extensive in each of the cost categories examined.

As described above, regional variation in charges for a T&A was fairly extensive in each of the cost categories examined. The reasons for these differences are usually attributed to the socioeconomic conditions of the region as well as the regional medical training and practices of the physicians. Whatever the reasons for the variations in costs, an equally important issue is the justification for the procedure. The rates of T&As are declining as more and more physicians and their constituents are being educated about the need for and efficacy of this procedure. In this era of improved health, increasing advocacy of less drastic medical treatment, and the rise in second opinion requirements, the rates of T&As will no doubt continue to decline, thus reducing the proportion of the health care dollar attributed to this surgery.

Whether T&As can or will routinely become an outpatient procedure is a decision currently being debated. The ultimate decision, of course, resides with the patient, family and the physician. Increased professional and public health education will help make this decision an informed and increasingly safe one. ☐

References

[1] Paradise, J.L., "Tonsillectomy and adenoidectomy." *Ped Clinics of N. Amer.* 28(4):881-892, 1981.

[2] Drake-Lee, A.B., Webber, P.A., "Adenotonsillectomy: Current debate." *The Pracitioner* 227: 929-933, 1983.

[3] Moore, F.D., Pratt, L.W., "Tonsillectomy in Maine: Regulation versus education as modulators of medical care." *Ann. Surg.* 194(2), 232-241, 1981.

[4] American College for Surgeons. *Socioeconomic Factbook for Surgery, 1983-1984.* Chicago, Illinois: American College for Surgeons, 1984; and National Center for Health Statistics, E.J. Graves, "1983 Summary: National Hospital Discharge Survey." *Advance Data from Vital and Health Statistics.* No. 100, DHHS Pub. No. (PHS) 84-1250, Hyattsville, Maryland, September 28, 1984.

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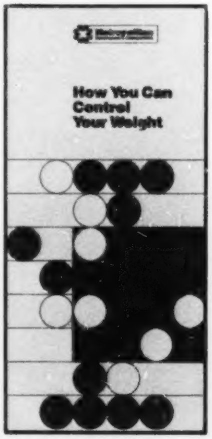
1983
Metropolitan Height & Weight Tables
MEN
WOMEN
TO MAKE AN APPROXIMATION OF YOUR FRAME SIZE

1983 Metropolitan Height and Weight Chart. Weights by height based on lowest mortality for men and women of small, medium and large frames. (18 by 27 inches)

EAT WELL BE WELL
1 Eat a Variety of Foods
2 Maintain Ideal Weight
3 Avoid Too Much Fat, Saturated Fat, and Cholesterol
4 Eat Foods with Adequate Starch and Fiber
5 Avoid Too Much Sugar
6 Avoid Too Much Sodium
7 If You Drink Alcohol, Do So in Moderation
Metropolitan

Eat Well/Be Well Poster. Bright garland of fruits and vegetables plus 7 dietary guidelines for wise eating and good health. (17 x 22 inches)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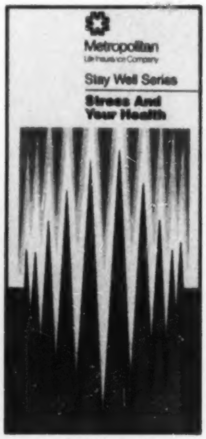
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For Further information, write to: Health and Safety Education Division, Dept. SB, Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010.

Coming in Future Issues

- Profile of Population Under Age Eighteen
- International Comparison of Life Expectancy at Selected Ages
- State Variations in Mortality Rates From Cancer
- Teenage Pregnancy: Nationwide Trends

Historical Perspectives

40 YEARS AGO

IN THE **1945** STATISTICAL BULLETIN

Twenty years' progress in child health conservation was disclosed by Metropolitan statisticians. Between 1922-23 and 1942-43, mortality among children 5-14 insured by Metropolitan decreased by 65 percent. For every two children who died under the 1942-43 mortality conditions, more than five would have died if the 1922-23 death rate had prevailed. The most spectacular gains were scored against the principal communicable diseases of childhood, where death rates decreased by at least 93 percent during the 20-year period. Then, rheumatic fever ranked first among the causes of death at ages 5-14. Mortality rates at the school ages had fallen to such low levels that possibilities of further reductions were limited. Therefore, continued progress would depend upon prevention or control of rheumatic fever, tuberculosis and accidents. (Page 9, January) □

The war against tuberculosis was being won. Metropolitan Life, through its systematic effort of annual medical examinations and a free sanatorium where necessary, had virtually eradicated TB among its employees. The Company's success served as a guide and encouragement to the whole tuberculosis movement. Following the success over TB, the emphasis shifted to the difficult problem of the cardiac diseases. Cardiovascular diseases accounted for almost one-half of all deaths in the United States. (The situation remains virtually unchanged after 40 years—ed.) Life insurance companies united their efforts to fund research in order to discover the cause and eventual prevention of cardiovascular diseases. (Page 4, June) □

Progress had been made in reducing mortality from home accidents. Modernization of the American home had made it a safer place in which to live and work. Education programs had alerted people to home hazards and how they could be minimized or eliminated. A study of Metropolitan Life policyholders aged 15-74 showed a drop of about 40 percent in the age-adjusted death rate from home accidents between 1933-34 and 1943-44 among adults. Among children aged 1-14 mortality declined in the early years of the decade, but then rose, reflecting wartime conditions that deprived youngsters of parental supervision and other safeguards. Home accidents claimed about 32,000 lives annually and ranked ninth among the causes of death. (Page 8, November) □

The *Statistical Bulletin* celebrated 25 years of publication. Metropolitan Life, by monitoring the mortality of its numerous policyholders, was able to record and interpret its unique data. The *Statistical Bulletin* was also used to report the extensive welfare activities of the Company. Since its beginning, the *Statistical Bulletin* had reported on considerable advances achieved by the public health movement, e.g., the significant reductions of typhoid fever and the principal communicable diseases of childhood. Infant mortality also decreased by more than 50 percent and life expectancy increased by over eight years. The publication served as a guide to other agencies engaged in life and health conservation. (Page 1, January) □

Metropolitan examined the contour of the mortality curve in 22 selected countries of both hemispheres during 1936-38 to ascertain seasonal patterns. In 16 countries mortality reached its peak in the winter; the others peaked in the spring. The winter peak was caused largely by the respiratory diseases. Summer, on the other hand, was the season of most favorable mortality for the majority of countries with modern medical and health services. Yet for countries where health conditions were substandard, mortality peaked in both winter and summer. The summer increase was due to diarrheal and other intestinal diseases and reflected the higher infant mortality rate. Medical advances, such as sulfa drugs and penicillin, would eventually modify the configuration of the seasonal mortality curve. (Page 7, February) □

The trend in cancer mortality, by site, was analyzed for the period 1911 to 1944. There was encouraging evidence that cancer patients were seeking medical care at an earlier stage in the disease and that their chances of survival had improved considerably. A representative sample of Metropolitan policyholders aged 1-74 confirmed that cancer death rates for various sites had generally declined. However, cancer of the lung and pleura showed an uninterrupted rise in mortality, but at a slower rate. This trend in cancer mortality was viewed with considerable optimism. Further progress and eventual control were seen as a major challenge to the medical profession and the public. (Page 1, July) □

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SB
STATISTICAL BULLETIN

Vol 67 No 1 Jan-Mar 1986

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10 **Profile of American Youth.** A statistical study with great import for the 21st century.

16 **Recent International Changes in Longevity.** Comparative analysis reveals more rapid gains in U.S. life expectancy.

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From The Editor's Desk

Infants are among the world's most vulnerable objects. Perhaps it's for that reason we tend to respond so quickly to their cries, and can be made so joyous by their smiles. On a deeper level, we may sense that from their obvious neediness springs a message: help me so that some day I may help you.

Children's Needs Examined

In that spirit, SB has focused its first two articles this quarter on youth. Our lead article and companion editorial address the unremitting problem of early teenage pregnancy. In the United States we seem to pretend that it does not exist. We might have been forgiven for that attitude, once. After all, the problem of children having babies makes us confront a dismal failure in managing the procreative side of our society. But also it causes us to face, if we dare, the present-day realities of the failure in expectations for the infants. America is nominally the land of limitless opportunity for everyone. Or is it, if your mother was 14 and unwed when you were born?

In an accompanying editorial, SB's editors ask that the United States refocus its concerns on the needs of the child born to the unwed teenage mother. The problem, says the editorial, will only be deeply affected when local leadership tackles it with full community cooperation.

Would you be surprised to know how many children in the United States were estimated to live in single parent homes in 1984? These data and others presented in this issue describe the demography of the childhood population in this country. The statistical tale they tell has great importance for the 21st century.

Life Expectancy

Did you know that between 1969-71 and 1979-81 the increase in life expectancy for white men at age 65 represented about 40 percent of the total increase in expectation of life at birth (for white men) in the United States? It was a demographic milestone, mostly attributable to the rapid decrease in cardiovascular deaths in that time period. See SB's brief article describing the event and discussing its likely future implications.

Cancer by Region

Cancer deaths in the United States follow state and regional boundaries in tantalizing ways. Sometimes this complex of diseases called cancer hints at causes through its geography. Stomach and colon cancers among native Japanese and their migrants to Hawaii are recent examples. Though the topic "total cancer deaths" limits causal inferences, nevertheless it presents much food for thought in this SB.

You have our best wishes for the New Year, and for much good reading, as well. □

Letters to the Editor

Reader Response to Costs of Coronary Bypass Surgery

Your series of articles on the costs of coronary bypass surgery provide a great deal of extremely important information. Unfortunately, some of the conclusions have been based upon erroneous or biased information.

For example, the conclusion by Mr. Briggs (Vol. 66, Apr-Jun 1985) that 13 percent of cases of coronary bypass surgery were needless must be based upon reports from the Coronary Artery Surgery Study, a clinical trial sponsored by the federal government, or from an old Veterans Administration study. Refutations of those studies have been published by others, and should be reviewed in depth before making sweeping conclusions such as this.

The issue of return to work is also unclear because the sample is too small to allow for conclusions. For example, perhaps Metropolitan has too many disincentives for returning to work. Or perhaps the type of surgery was not adequate. Where have the patients gone for their surgery? What is the average number of bypasses per patient? What were the mortality rates in this series? Answers to these questions would reveal a lot regarding the subsequent readmissions. Many studies have shown that the rehospitalizations and medical problems in surgical patients are much less frequent than they are in medically controlled patients. Why are the data from Metropolitan different?

While the statement that many other modalities are now available to treat patients is true, there is no convincing evidence, for example, that angioplasty or lasers are unassailable alternatives.

I would urge that before disseminating such information, a more balanced and unbiased approach be considered. □

Victor Parsonnet, M.D.
Dr. Parsonnet is Director of Surgery
Newark Beth Israel Medical Center
Newark, New Jersey

Editor's Reply

Dr Parsonnet has raised interesting points based on the April-June issue of SB, which included two articles and a guest editorial on the subject of coronary bypass surgery. In answer to his first one, SB is impressed that indications for bypass surgery have become more sharply defined in recent years, but that there has not been convincing statistical evidence that widespread application of any such clinical guidelines or standards has occurred. As a result, we stand by the 13 percent figure used to estimate the proportion of surgeries in which nonsurgical therapy would probably be just as effective.

On the subject of comparability of the Metropolitan Life Insurance Company's employees' return to work after bypass surgery, because the literature on employee populations is virtually nonexistent, SB was careful to avoid any suggestion that the Met Life experience was representative of that of other industries. For this reason, Dr Parsonnet's questions about the kind of surgery, disincentives to return to work, the small sample size, all call for more publication of studies from other industries, which could provide more perspective on this multibillion dollar surgical enterprise.

SB wants to urge its readers to continue to follow the literature describing the treatment of coronary artery disease. We are not confident that either surgery or pharmacology holds much promise compared to the prospects of an arteriosclerotic preventive life-style, such as that advocated by Met Life and the American Heart Association. The editorial mentioned the alternatives to surgery, however, as a reminder that this complex story is not yet finished. □

Trends in Teenage Childbearing 1970-83

Patterns of childbearing in the United States have changed over the past 20 years. Today more women than ever before are choosing to have children later in life as they pursue educational opportunities and careers, and proportionately more women—particularly white women in their 30s—are bearing and opting to rear their children as single parents.[1-3] The patterns of parenthood for teenagers, i.e., females under 20 years of age, are also changing. The number of teenagers in the United States is declining as are the numbers of children born to them and the teen birth rates per 1,000 population. Nonetheless, teenage birth rates in the United States remain extremely high and are higher than those in all but a few of the developed countries of the

David Johnson

[illegible]

world.[1-4] Teenage childbearing stands out because it not only represents a serious social problem, but a major medical problem for both the young mother and her infant. It is estimated that 20 percent of all low birth weight babies born in the United States are born to teenagers and that the majority of these mothers receive inadequate prenatal care. In addition, babies born to teenagers are three times more often raised in a single parent household than are children born to women in their 20s.[4]

It is obvious that early childbearing is a complex issue and one with major economic, social and medical ramifications. Concern about the situation has been increasing, and solutions continue to be proposed and debated by religious, economic, education, social and medical professionals, government officials and the general public.

Teenage Childbearing 1970-83

Based on the most recent natality data from the National Center for Health Statistics, the following report presents trends in and comparisons of births and birth rates* for all teenagers in the United States between 1970 and 1983 and for white and all other, or nonwhite, teens during this period. The nonwhite rates include teens of black and other racial origins with blacks accounting for over 90 percent of the total.[3] Rates are reported for mothers in three age groups, 10-14, 15-17 and 18-19, as well as for teenagers 15-19 combined—this latter group comprises 98 percent of all teenage births in this country.

As shown in the accompanying table, live births to women under 20 years of age numbered 499,038 in the United States in 1983. Of these births, 2 percent were to girls under 15, 35 percent were to teenagers 15-17 and 63 percent were to 18 and 19 year olds. The total number of births to teenagers in 1983 was almost 5 percent lower than that reported for 1982; the proportion of teen births dropped from 18 percent of all live births in 1970 to 14 percent in 1983. During this 14-year period, birth rates among teenagers 10-14 have remained fairly stable, dropping from 1.2 to 1.1 per 1,000, while the decreases in rates among older teens have been greater, from 68.3 to 51.7. These decreases notwithstanding, the teenage birth rate in the United States continues to lead most developed *and* developing countries where the teenage birth rates are also decreasing.[4,5]

Declining Rates

Between 1970 and 1978, there was a slow but steady decline in the number and rate of births to all teenagers across the country. Slight increases in teenage birth rates were noted at the end of the 70s and between 1981-82, but in 1983, the rate for 15-19 year olds had dropped 2 percent to a level of 51.7 per 1,000. This rate was just slightly above that for 1978, which was the lowest rate recorded during the 14 years of review. In 1983 both the birth rate and the actual number of births to teenagers 15-19 was 24 percent lower than that registered in 1970.

---

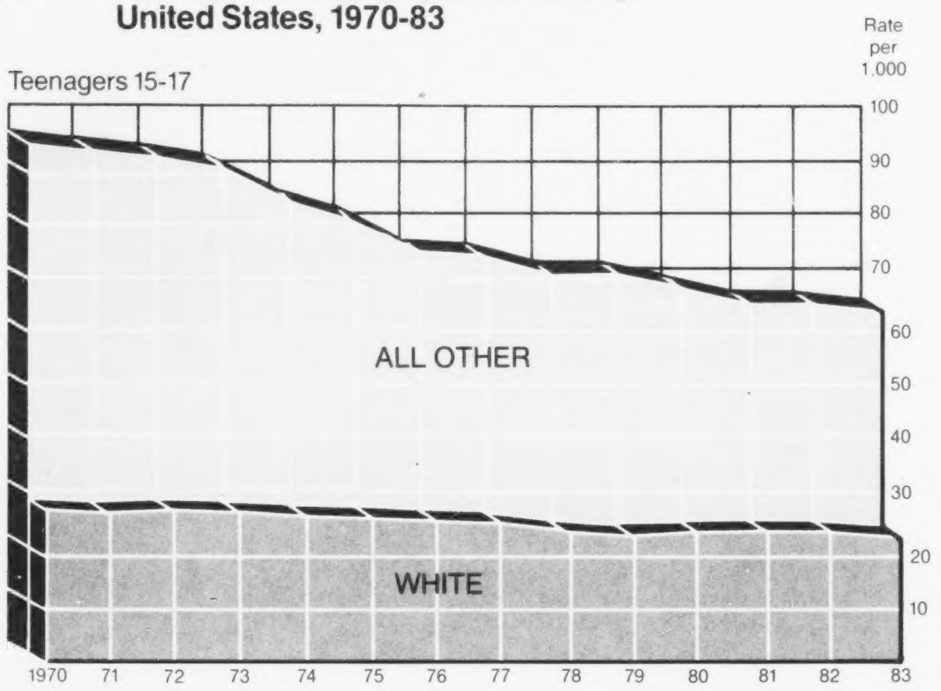
*Birth rates represent the number of live births to 1,000 women in the specified age groups.

Number of Live Births and Birth Rates to Women Under 20, by Race United States, 1970-83

	Number of Births		Birth Rate (1,000) Age of Mother			
Year	Total	Mothers Under 20	10-14	15-19	15-17	18-19
All Races						
1983	3,638,933	499,038	1.1	51.7	32.0	78.1
1982	3,680,537	523,531	1.1	52.9	32.4	80.7
1981	3,629,238	537,024	1.1	52.7	32.1	81.7
1980	3,612,258	562,330	1.1	53.0	32.5	82.1
1979	3,494,398	560,171	1.2	52.3	32.3	81.3
1978	3,333,279	554,179	1.2	51.5	32.2	79.8
1977	3,326,632	570,609	1.2	52.8	33.9	80.9
1976	3,167,788	570,672	1.2	52.8	34.1	80.5
1975	3,144,198	594,880	1.3	55.6	36.1	85.0
1974	3,159,958	607,978	1.2	57.5	37.3	88.7
1973	3,136,965	616,957	1.2	59.3	38.5	91.2
1972	3,258,411	628,362	1.2	61.7	39.0	96.9
1971	3,555,970	639,520	1.1	64.5	38.2	105.3
1970	3,731,386	656,460	1.2	68.3	38.8	114.7
White						
1983	2,904,250	342,183	.6	43.6	24.8	68.3
1982	2,942,054	362,101	.6	44.6	25.2	70.8
1981	2,908,669	373,983	.5	44.6	25.1	71.9
1980	2,898,732	392,229	.6	44.7	25.2	72.1
1979	2,808,420	388,209	.6	43.7	24.7	71.0
1978	2,681,116	384,572	.6	42.9	24.9	69.4
1977	2,691,070	396,854	.6	44.1	26.1	70.5
1976	2,567,614	398,329	.6	44.1	26.3	70.2
1975	2,551,996	415,202	.6	46.4	28.0	74.0
1974	2,575,792	425,205	.6	47.9	28.7	77.3
1973	2,551,030	429,740	.6	49.0	29.2	79.3
1972	2,655,558	438,559	.5	51.0	29.3	84.3
1971	2,919,746	450,856	.5	53.6	28.5	92.3
1970	3,091,264	467,928	.5	57.4	29.2	101.5
All Other						
1983	734,683	156,855	3.5	89.3	64.2	123.9
1982	738,483	161,430	3.6	91.5	65.6	128.2
1981	720,569	163,041	3.6	91.8	65.2	130.8
1980	713,526	170,101	3.9	94.6	68.3	133.2
1979	685,978	171,962	4.1	96.5	70.5	134.9
1978	652,163	169,607	4.0	96.0	70.4	134.4
1977	635,562	173,755	4.3	99.5	74.8	136.8
1976	600,174	172,343	4.3	99.9	75.5	137.2
1975	592,202	179,678	4.7	106.4	80.5	146.1
1974	584,166	182,773	4.6	111.3	84.9	153.1
1973	585,935	187,217	5.0	117.5	90.5	160.9
1972	602,853	189,803	4.7	123.8	93.8	173.3
1971	636,224	188,664	4.7	128.5	94.0	185.6
1970	640,122	188,532	4.8	133.4	95.2	195.4

Source Reports from the National Center for Health Statistics, 1984 and 1985

Figure A—Teenage Birth Rate by Race and Age
United States, 1970-83



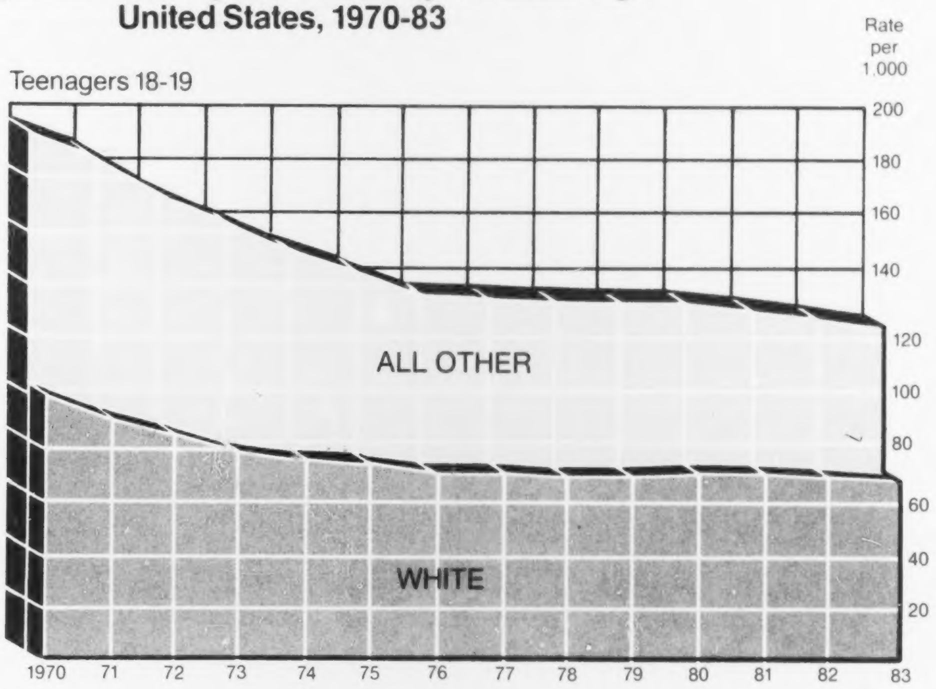
Source: See Table.

The largest decrease in rates over this 14-year period was evident among 18-19 year olds, where the rate dropped 32 percent. For teens 15-17, an 18 percent drop in birth rate was registered between 1970 and 1983. Among the 10-14 year olds, there was an 8 percent decrease—1.2 per 1,000 in 1970 to 1.1 in 1983. Similarly, the proportion of all births registered to teenagers decreased 22 percent during this time span.

Between 1970-83, birth rates among 18-19 year olds dropped 32 percent while dropping only 18 percent among 15-17 year olds.

Between 1982 and 1983 the decline in teen birth rates continued to be more pronounced among 18-19 year olds than either of the other two age groups. In 1983 the birth rate to older teens was 78.1 per 1,000, down 3 percent from 1982. Among 15-17 year olds, the birth rate declined 1 percent during this period. The rate

Figure B—Teenage Birth Rate by Race and Age United States, 1970-83



Source: See Table.

of decrease has slowed somewhat from that experienced in the early part of the 1970s, but the decline in rates is still more exaggerated among the older teens.

Births Among Whites and Nonwhites

Considerable differences persist in the number of births and the birth rates between whites and teens of all other races in the United States (Figures A and B). Of all births to nonwhite women in 1983, 21 percent were to mothers under 20, whereas 12 percent of all white births were to teenagers. The largest differential in rates between the races was among the youngest teenagers. The birth rate for nonwhites 10-14 was almost six times that for whites in this age group in 1983, while the rate for nonwhite teenagers 15-19 was slightly more than twice that for whites, 89.3 and 43.6 per 1,000, respectively. The proportion of births to nonwhite teenagers steadily decreased with age, from 59 percent of all births to 10-14 year olds to 27 percent of births to 19 year olds.

Between 1970 and 1983, the birth rates fell more sharply for nonwhite teenagers in the older age groups than for their white counterparts. The difference in the declining rates was the greatest among the 15-17 year olds, where the rate fell 33 percent for nonwhites and 15 percent for white teenagers in this age range. For teenagers 18-19, the nonwhite birth rate dropped 37 percent from 195.4 per 1,000 in 1970 to 123.9 in 1983; the rate for whites in this age group dropped 33 percent from 101.5 to 68.3 per 1,000 during this period. While the gap between the white and nonwhite teenage birth rates continues to decrease slowly, the rates remain unacceptably high for both groups of teens.

There are at least three compelling reasons not to take comfort from the apparent leveling-off of teen birth rates in the United States. First, there is no firm evidence that the reported decline can be attributed to any one educational or other intervention program which would suggest a continuation of this

After the Tears, Then What?

The tragedy of early teenage pregnancy and childbirth was once well summarized by Campbell* when he wrote that a 16-year-old unmarried mother has 90 percent of her life's script written for her.

In a country like the United States, so much of any individual's future depends on the ability to participate meaningfully in a high technology economy. Where then does that place the unwed, usually untrained teenage mother and her infant? SB wants more national attention given to facts like those presented in this issue.

How proud can the United States be about its federal, state, and local taxpayers' (individual and industrial) response to births by children for which the nation—and the children, themselves—pay such a high social and economic price? If we are to make progress against this complex problem, energetic assistance will be needed. Help must be wide-ranging from local school systems, expanded social service networks, vocational/educational programs and combined public-private financing initiatives, if the nation is not to act as a conspirator in the fulfillment of Campbell's pessimistic prophecy.

Let's also consider the needs of the infants, toddlers, preschoolers born to these girls. Sadly, these offspring have greater risk of illness and infant death than the average. They need special

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*Campbell, Arthur A., "The Role of Family Planning in the Reduction of Poverty." *Journal of Marriage and the Family* 30(2):236-245, 1968.

trend over the long run. Second, American rates are much higher than the majority of those in other advanced societies. And third, the issue is so emotionally charged in the United States, the degree of social consensus necessary to deal with it effectively is not likely to emerge in the indefinite future, unless strong, new leadership appears. If our teen rates are to fall to the range of other western countries, public action will have to be taken to define and then move toward that minimum goal. Not until the problem is recognized socially can progress be made toward an acceptable resolution of the situation. □

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[1] Jones EF, Forrest JD, Goldman N, Henshaw SK, Lincoln R, Rosoff JJ, Westoff CF, Wulf D: "Teenage pregnancy in developed countries: Determinants and policy implications." *Family Planning Perspectives* 17:53-63, 1985

[2] Westoff CF, Foster AD: "Teenage fertility in developed nations." *Family Planning Perspectives* 15:105-117, 1983

[3] National Center for Health Statistics: *Advance Report of Final Natality Statistics, 1983. Monthly Vital Statistics Report* Vol. 34, No. 6, Supp. DHHS Publication No. (PHS) 85-1120. Hyattsville, Md.: Public Health Service, 1985

[4] Pittman, K: *Preventing Children Having Children. Clearinghouse Paper No. 1*. Washington, D.C.: Children's Defense Fund, 1985

[5] Alan Guttmacher Institute: *U.S. and Cross-National Trends in Teenage Sexual and Fertility Behavior*. New York, N.Y., 1985

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social programs, if their childhood is to avoid the pernicious legacies of a severely deprived, frequently single-parent home.

Not that unwed teenagers, young though they may be, inherently lack competence. They may have abundant potential. But the burden of poverty and hopelessness, usually associated with limited education, is often simply too great. Marriage for these youngsters is generally not a realistic solution either. A teenage couple, lacking experience and marketable skills, also faced with parenting responsibilities, may be in a desperate situation. No nation that values its future, wants any part of its next generation to be raised in a destitute family environment.

What are the responsible actions of a society confronting such problems?

The answer inevitably must come from the involved communities. There, creative, caring service teams need to be formed with broad representation that includes parent(s), grandparents, school personnel, health workers and social workers. These groups could not only identify and help children at risk but assist young mothers and their infants toward self-sufficient lives.

Such teams, with solid community support, may counter the persistent forces that sustain early teenage pregnancy. Unless these forces are checked, they will dim the future's brightness for us all. □

The Editors

Profile of American Youth

The child population of the United States has been gradually declining since 1970. However, projections by the Bureau of the Census indicate that a reversal in the trend will shortly occur and the number of children under age 18 will begin to increase. The turnabout is attributed to the rising numbers of women of childbearing ages (although their total will peak around 1990) and to the increase in the total fertility rate.

In July 1984 there were 62,689,000 children under 18 years of age in the United States. This represents a decline of about 7 million since 1970 and 1 million since 1980. By 1990, however, it is expected that the number of persons under 18 years of age will rise to about 64⅓ million and reach 67¾ million by the year 2000. The accompanying figure presents the population trend for the five subgroupings of these children. After the turn of the next century, the total number of children under age 18 is projected to decline.

> Projections indicate that the number of children under age 18 will soon begin to increase

Analysis of the selected age groups within the overall age bracket reveals diverse patterns. Thus, it is anticipated that the number of children under age 6 will peak around 1990. On the other hand, youngsters aged 6-13 will be more numerous in 2000 than at any time since 1970. Children aged 6-9 are projected to increase rapidly between 1984 and 1990, but in the succeeding decade the pace will diminish. Among youngsters 10-13 years of age, the outlook is for a continuation of the gradual decline in numbers since 1970 until 1990, at which time a sharp reversal will occur. The pattern projected for youngsters aged 10-13 is also expected to be repeated among teenagers 14-17 years of age. Their numbers have dropped sharply since 1980 and will continue to fall until around 1990; thereafter, their total will rise markedly.

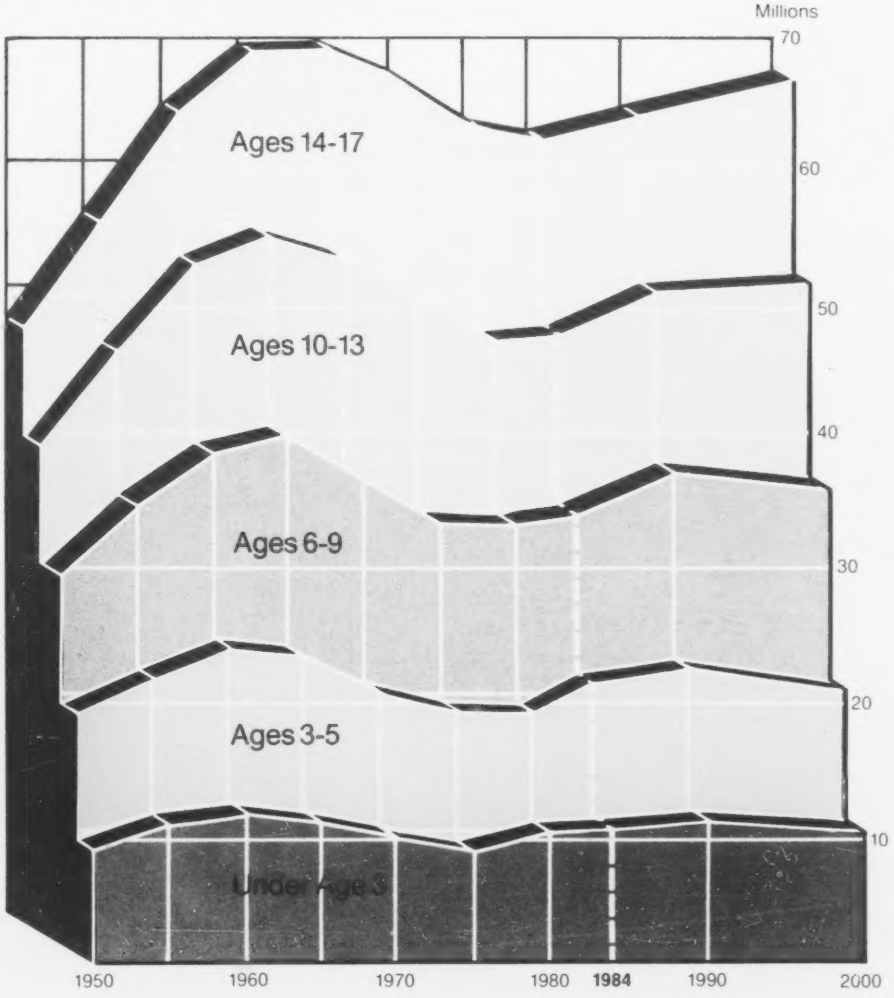
There is very little variation by age in the composition of the population under 18 either by sex or by race. Of all youths, boys constitute 51 percent of the total, while whites comprise 81 percent of the group. These proportions are virtually constant throughout the five age brackets. In 1984 males under 18 numbered 32.1 million and females 30.6 million.

Schooling

Completion of 12 years of education for all children has long been a national goal. In 1983 nearly 90 percent of the children aged 3-17 were enrolled in school. At ages 6-9 the proportion enrolled was near 97 percent, 99 percent at ages 10-13, and slightly lower (95 percent) for teenagers (14-17 years). Among children 3-5 years of age, 41 percent of those residing in metropolitan areas attended preschool compared with only 30 percent of the children who live in nonmetropolitan areas. The disparity in these percentages may be attributed to the greater accessibility and availability of preschools in the more populated areas.

Geographically, there is remarkable uniformity in the relative proportions of the child population enrolled in school. Overall, 34 per-

Number of Children Under Age 18
United States, 1950-84, Projected to 2000



Source: Various reports of the Bureau of the Census

Characteristics of Children Under Age 18 United States

Characteristics	Age Group					
	Under 18	Under 3	3-5	6-9	10-13	14-17
Numbers in 1,000's (July 1)						
1960	64,526	12,278	12,022	14,852	14,155	11,219
1970	69,762	10,204	10,719	16,162	16,753	15,924
1980	63,687	10,088	9,545	13,422	14,493	16,139
1984	62,689	10,726	10,494	12,948	13,814	14,707
1990	64,337	11,530	11,465	14,794	13,598	12,950
2000	67,391	10,480	10,792	15,113	15,624	15,382
Age distribution						
1960	100.0	19.0	18.6	23.0	22.0	17.4
1970	100.0	14.6	15.4	23.2	24.0	22.8
1980	100.0	15.8	15.0	21.1	22.8	25.3
1984	100.0	17.1	16.7	20.7	22.0	23.5
1990	100.0	17.9	17.8	23.0	21.2	20.1
2000	100.0	15.6	16.0	22.4	23.2	22.8
Percent change						
1960-1970	8.1	−16.9	−10.8	8.8	18.4	41.9
1970-1980	−8.7	−1.1	−11.0	−17.0	−13.5	1.4
1980-1984	−1.6	6.3	9.9	−3.5	−4.7	−8.9
1984-1990	2.6	7.5	9.3	14.3	−1.6	−11.9
1990-2000	4.7	−9.1	−5.9	2.2	14.9	18.8
Sex-percent (1984)	100.0	100.0	100.0	100.0	100.0	100.0
Male	51.2	51.2	51.1	51.2	51.2	51.2
Female	48.8	48.8	48.9	48.8	48.8	48.8
Race-percent (1984)	100.0	100.0	100.0	100.0	100.0	100.0
White	81.4	81.4	81.1	81.3	81.0	82.0
All other	18.6	18.6	18.9	18.7	19.0	18.0
School enrollment—percent (1983)						
Metropolitan area	100.0*	†	100.0‡	100.0‡	100.0	100.0
Enrolled	90.0	†	41.3	97.7	99.6	95.5
Not enrolled	10.0	†	58.7	2.3	.4	4.5
Nonmetropolitan area	100.0*	†	100.0‡	100.0‡	100.0	100.0
Enrolled	87.5	†	30.4	97.1	99.1	94.0
Not enrolled	12.5	†	69.6	2.9	.9	6.0
Region-percent	100.0*	†	100.0‡	100.0‡	100.0	100.0
Northeast	20.4	†	20.5	20.4	19.5	21.7
Midwest	25.8	†	24.3	25.9	25.4	26.6
South	34.1	†	33.6	34.0	34.7	33.3
West	19.7	†	21.6	19.7	20.4	18.4
Living arrangement—percent (1984)						
White	100.0	100.0	100.0	100.0	100.0	100.0
In families	99.9	99.9	99.9	99.9	99.9	99.9
Both parents	81.0	85.1	82.5	81.6	79.4	77.3
Mother only	15.1	12.0	14.4	15.2	16.4	16.6
Father only	2.1	2.0	1.8	1.8	2.2	2.8
Neither parent	1.7	.8	1.2	1.3	1.9	3.2
Not in families	.1	.1	.1	.1	.1	.1
All other	100.0	100.0	100.0	100.0	100.0	100.0
In families	99.8	99.8	99.9	99.8	99.7	99.9
Both parents	48.1	45.9	46.6	49.8	50.1	46.8
Mother only	43.4	48.6	46.9	41.7	40.9	40.4
Father only	2.8	2.6	1.9	2.9	2.3	4.5
Neither parent	5.5	2.7	4.5	5.4	6.4	8.2
Not in families	.2	.2	.1	.2	.3	.1

*Excludes ages under 3

†Not applicable

‡Relates to ages 3-4 and 5-9, respectively

Source: Various reports by the Bureau of the Census cent of the children under 18 attending classes reside in the South while around 26 percent live in the Midwest. Around 20 percent of the child population going to school dwell in the Northeast region of the country and a like number in the West. When each of the five age groups is examined, it is apparent that there are only minor variations in the percentages.

Family Structure

The vast majority of youngsters still reside with both their parents in a family situation. However, the proportion of children in this living arrangement is diminishing rapidly. In particular, the recent trend toward more divorces and separations has spurred this change in residence status. For example, in 1970 almost 9 out of 10 American children lived with their mother and father, whereas in 1984 the proportion dropped to three-fourths. Along ethnic lines, the 1984 data revealed that four-fifths of white children resided with both parents, but less than half of the children of all other races lived in a similar situation.

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About 20 percent of children under 18, not living with both parents, resided with their mothers (almost double the relative number in 1970). Less than 5 percent of the youngsters reside with either their father or in some other form of arrangement.

There has been a sharp rise in the proportion of single parents who never married: from 7 percent in 1970 to 25 percent in 1984.

The single parent in a family that has a child under age 18 is, 40 percent of the time, a divorced individual. Also noteworthy has been the sharp rise in the proportion of single parents who never married: from 7 percent in 1970 to 25 percent in 1984.

Substantial racial differences were found in the marital status of the single parent raising a child under 18. Over half of the white parents in this situation were divorced and another one-eighth were never married; comparable proportions for persons of all other races were one-fourth and over two-fifths, respectively. The bottom two tiers of the table present details of the living arrangements of white and nonwhite children under 18 by age. ☐

Capsule Briefs

are timely literature selections with broad reader interest

Shrink From Responsibility?

Those following the medical malpractice problems of the United States have a new saga to relate. An appeals court reversed the trial court's decision and held that a psychiatrist was responsible for the negative consequences of his patient's driving behavior if the patient's condition was not properly treated. In this case —Duval vs. Goldin 362 N.W.2d 275 (Mich. Ct. of App., Dec., 3, 1984)--the patient had epilepsy, and the court found that the psychiatrist had not taken into consideration the risk to other motorists when he failed to treat his patient. (*American Medical News*, p. 17, September 27 1985.)□

Dinosaur Extinction Theory Fuels Nuclear Winter Debate

Clay samples from three Cretaceous period geologic excavations have uncovered traces of ash that have been interpreted as evidence that a worldwide layer of soot existed at the time of the massive extinction of dinosaurs. The origin of the soot may have been wildfires resulting from a gigantic meteor's striking the earth in the northern hemisphere. If so, the extinction process may have simulated the conditions predicted by computer that could arise from multiple nuclear explosions ("Nuclear Winter"). Might the dinosaurs' extinction have pointed the way to reducing the risk of our extinction? Ironic, if true. (Wolback, W.S., et al. *Science* 23:167-170, October 1985.)□

Trials of Hypertension Therapy

The clinical trial (CT), with its use of randomized allocation of persons into treatment and placebo (or, control) groups, is intended primarily to answer puzzling therapy questions. Sometimes, however, biologic processes are reluctant to yield information, despite our increasing scientific understanding. Take hypertension, for example. The recent finis of four large CTs failed to resolve effectively some of the most burning questions about the benefits of treatment of the mild form (persistent diastolic levels 100mmHg): who and how to treat, and whether diuretics or Beta blockers are the preferable choice. (Editorial, *Lancet* 8456:645-647, 1985.)□

Aspirin: Major Risk Factor for Reye's Syndrome?

Reye's syndrome can be a mild to permanently brain damaging illness with accompanying liver injury and even can cause death in children and infants. It usually occurs after an upper respiratory infection or chickenpox. Salicylates have been suspected as the cause. This case-control study, a pilot for a nationwide investigation, found an association between salicylate exposure in children and infants and condition. If confirmed by the larger study, it should help prevent future cases. (Hurwitz, E.S., et al. *New England Journal of Medicine* 313(14):849-57, 1985.)□

Another Pet Idea Discarded

It has been suggested that pet ownership among the elderly may be associated with better mental health. To test this interesting hypothesis, 48 suicides were studied in a case-control design (two types of controls) in Washington County, Md. Only 7 of 48 were over age 65, however. The deaths occurred in the years 1975-83. All had completed a 1975 questionnaire that included an item about pet ownership. The authors concluded, "No material association between pet ownership and suicide was observed." (Helsing, K.J. and Monk, M., *American Journal of Public Health* 75:1223-1224, 1985.)□

Good News for Type 'A' Personalities

If rushing around to meet deadlines is your cup of tea, and you're tired of your friends telling you to slow down because it may give you a heart attack, then read on. A clinical trial of coronary heart disease prevention (Multiple Risk Factor Intervention) from 1973-82 involved 12,772 high-risk men who were analyzed for Type 'A' personality (high drive, time urgency-oriented). Investigators found, in contrast to other studies (with many fewer subjects), that Type 'A's were not at higher risk. The authors conclude that the "results raise questions regarding the robustness of the Type 'A' hypothesis in its present form." (Shekelle, R.B., et al, *American Journal of Epidemiology* 122:559-70, 1985.)□

Finding Happiness in Japan

Are industries in Japan better able to provide a mentally healthier work environment than their American counterparts? While a full answer might be difficult to obtain, the New York Business Group on Health invited a panel of Japanese businessmen and researchers to present their assessment to a full-day conference in New York. Some results were: some companies do better than others regarding mental health programs; upper level employees have more mental health awareness; larger, more successful companies have higher mental health ratings; and introduction of technology per se does not cause poorer company ratings. It all seems familiar. (*New York Business Group on Health Newsletter* 5(6):1, 4, 11, 1985.)□

Recent International Changes in Longevity

During the 1970s expectation of life at birth in the United States increased significantly. This is in marked contrast to the stagnation in life expectancy enhancement that occurred during the 1960s. Similar experiences were reported in other countries of low mortality, although the increments in life expectancy between 1970 and 1980 were generally smaller. As a result of the favorable trend in the United States, international longevity differences have, for the most part, narrowed.

In the United States, life expectancy at birth increased to 73.9 in 1979-81 from 70.7 in 1969-71, or by 3.2 years. During the prior 10-year period the gain in longevity was only 0.8 years. Table 1 shows selected values from the general population 1979-81 United States Life Table by age, race and sex. This table was prepared by the National Center for Health Statistics from deaths during the three-year period 1979-1981 and the 1980 Census of Population. Inasmuch as census data is a fundamental component in the construction of the table and is compiled every 10 years, the 1979-81 United States Life Table will be used as a standard until the next decennial enumeration is prepared.

Perusal of the expectation of life values in the table reveals that persons aged 25 can expect, on the average, 50.8 years of additional life while those aged 45 can look forward to another 32.3 years and those 65 years of age, 16.5 years. At the advanced ages, persons who attain age 85 can anticipate another 6.0 years, and 2.7 years remain at age 100.

Life tables are constructed from mortality rates and these are shown in the right half of Table 1. A graphic presentation of the 1979-81 mortality curve for the total population is shown in the figure on Page 18. As is evident, mortality at birth is relatively high but decreases rapidly until age 11. A marked reversal in the curve then occurs, and before leveling off, reaches a peak at age 23. This rapid acceleration in the mortality rates in the late teens and early 20s is attributed to deaths from violent causes—mainly motor vehicle accidents. After the late 20s, there is a slow resumption in the upward trend of the curve, which then accelerates with advance in age.

Significant Improvements in American Longevity

Longevity of American men and women is frequently compared with life expectancy of persons in other countries of low mortality and, unfortunately, the past results were not very favorable. However, analysis of recent data indicates impressive gains have been made. In the United States, expectation of life at birth for newborn girls during 1979-81—77.6 years—was exceeded by that in 11 other nations. Among infant boys, average future lifetime in the United States—70.1 years—ranked 15th. The current standings for both boys and girls are an improvement of a few places from the relative positions a decade earlier.

Not only has the relative ranking of United States life expectancy improved, but the gap between the nations with the best longevity record and United States experience has narrowed considerably. In the period around 1980 expectation of life at birth for boys was highest in Iceland—namely 73.9 years. This value was 3.8 years greater than the comparable figure in the United States. A decade earlier, Sweden experienced the most favorable expectancy for boys (71.7 years) and it exceeded the longevity figure in the United States by 4.7 years.

Currently, the second highest figure for male expectation of life at birth was reported

Table 1—Expectation of Life and Mortality Rates by Age and Sex United States, 1979-81

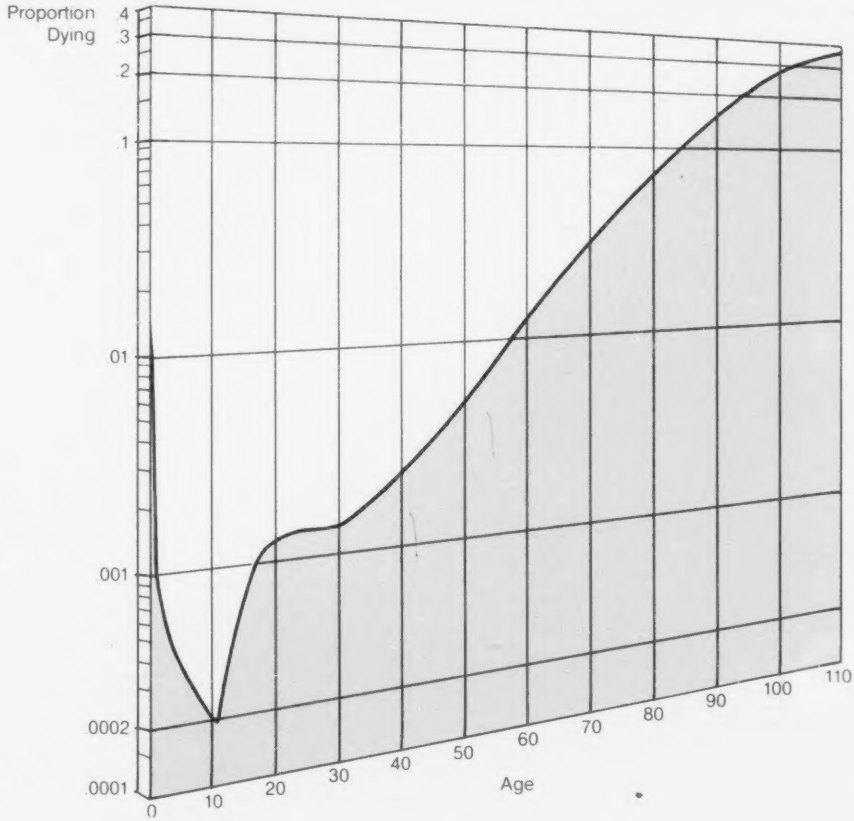
	Expectation of Life in Years					Mortality Rate per 1,000				
	Total	White		All Other		Total	White		All Other	
Age	Persons	Male	Female	Male	Female	Persons	Male	Female	Male	Female
0	73.9	70.8	78.2	65.6	74.0	12.6	12.3	9.7	20.6	17.4
1	73.8	70.7	78.0	66.0	74.3	.9	.9	.8	1.4	1.2
2	72.9	69.8	77.0	65.1	73.4	.7	.7	.5	1.0	.8
3	71.9	68.8	76.1	64.2	72.5	.5	.5	.4	.8	.6
4	71.0	67.8	75.1	63.2	71.5	.4	.4	.3	.7	.5
5	70.0	66.9	74.1	62.3	70.5	.4	.4	.3	.6	.4
6	69.0	65.9	73.2	61.3	69.6	.3	.4	.3	.5	.3
7	68.0	64.9	72.2	60.3	68.6	.3	.3	.2	.5	.3
8	67.1	63.9	71.2	59.4	67.6	.3	.3	.2	.4	.3
9	66.1	63.0	70.2	58.4	66.6	.2	.2	.2	.3	.2
10	65.1	62.0	69.2	57.4	65.6	.2	.2	.2	.3	.2
11	64.1	61.0	68.2	56.4	64.7	.2	.2	.2	.3	.2
12	63.1	60.0	67.2	55.4	63.7	.3	.3	.2	.4	.3
13	62.1	59.0	66.2	54.5	62.7	.4	.5	.3	.6	.3
14	61.2	58.0	65.3	53.5	61.7	.5	.7	.3	.8	.4
15	60.2	57.1	64.3	52.5	60.7	.7	1.0	.4	1.0	.4
16	59.2	56.1	63.3	51.6	59.8	.8	1.2	.5	1.2	.5
17	58.3	55.2	62.3	50.6	58.8	1.0	1.4	.5	1.4	.6
18	57.3	54.3	61.4	49.7	57.8	1.1	1.5	.5	1.6	.6
19	56.4	53.4	60.4	48.8	56.8	1.1	1.6	.6	1.9	.7
20	55.5	52.4	59.4	47.9	55.9	1.2	1.8	.6	2.1	.7
21	54.5	51.5	58.5	47.0	54.9	1.3	1.9	.6	2.4	.8
22	53.6	50.6	57.5	46.1	54.0	1.3	1.9	.6	2.6	.8
23	52.7	49.7	56.5	45.2	53.0	1.3	1.9	.6	2.8	.9
24	51.7	48.8	55.6	44.3	52.1	1.3	1.9	.6	2.9	1.0
25	50.8	47.9	54.6	43.5	51.1	1.3	1.8	.6	3.0	1.0
26	49.9	47.0	53.6	42.6	50.2	1.3	1.8	.6	3.1	1.1
27	48.9	46.1	52.7	41.7	49.2	1.3	1.7	.6	3.3	1.2
28	48.0	45.2	51.7	40.9	48.3	1.3	1.7	.6	3.4	1.2
29	47.1	44.2	50.7	40.0	47.3	1.3	1.7	.6	3.5	1.3
30	46.1	43.3	49.8	39.1	46.4	1.3	1.7	.7	3.6	1.3
31	45.2	42.4	48.8	38.3	45.4	1.3	1.7	.7	3.7	1.4
32	44.2	41.5	47.8	37.4	44.5	1.4	1.7	.7	3.8	1.5
33	43.3	40.5	46.9	36.5	43.6	1.4	1.7	.8	4.0	1.6
34	42.4	39.6	45.9	35.7	42.6	1.5	1.8	.8	4.1	1.7
35	41.4	38.7	44.9	34.8	41.7	1.6	1.8	.9	4.4	1.9
36	40.5	37.7	44.0	34.0	40.8	1.7	2.0	1.0	4.6	2.1
37	39.6	36.8	43.0	33.1	39.9	1.8	2.1	1.1	4.9	2.2
38	38.6	35.9	42.1	32.3	39.0	2.0	2.2	1.2	5.2	2.5
39	37.7	35.0	41.1	31.5	38.1	2.1	2.4	1.3	5.6	2.7
40	36.8	34.0	40.2	30.6	37.2	2.3	2.6	1.4	6.0	2.9
41	35.9	33.1	39.2	29.8	36.3	2.5	2.9	1.6	6.4	3.2
42	35.0	32.2	38.3	29.0	35.4	2.8	3.2	1.7	6.9	3.5
43	34.1	31.3	37.3	28.2	34.5	3.1	3.5	1.9	7.4	3.8
44	33.2	30.4	36.4	27.4	33.6	3.4	3.8	2.1	8.1	4.1
45	32.3	29.5	35.5	26.6	32.8	3.7	4.2	2.3	8.8	4.5
46	31.4	28.7	34.6	25.9	31.9	4.0	4.6	2.5	9.5	4.9
47	30.5	27.8	33.7	25.1	31.1	4.4	5.1	2.8	10.4	5.4
48	29.6	26.9	32.8	24.4	30.2	4.9	5.7	3.1	11.3	5.9
49	28.8	26.1	31.9	23.6	29.4	5.4	6.4	3.4	12.3	6.4
50	27.9	25.3	31.0	22.9	28.6	5.9	7.1	3.8	13.2	6.9
51	27.1	24.4	30.1	22.2	27.8	6.4	7.8	4.1	14.2	7.4
52	26.3	23.6	29.2	21.5	27.0	7.0	8.5	4.5	15.3	8.0
53	25.5	22.8	28.3	20.9	26.2	7.6	9.3	4.9	16.5	8.6
54	24.6	22.0	27.5	20.2	25.4	8.3	10.3	5.3	17.7	9.3
55	23.9	21.3	26.6	19.6	24.7	9.0	11.3	5.8	19.1	10.0
56	23.1	20.5	25.8	18.9	23.9	9.8	12.3	6.3	20.4	10.8
57	22.3	19.7	24.9	18.3	23.2	10.6	13.4	6.8	21.7	11.6
58	21.5	19.0	24.1	17.7	22.4	11.5	14.6	7.4	23.1	12.5
59	20.8	18.3	23.3	17.1	21.7	12.5	16.1	8.1	24.6	13.4
60	20.0	17.6	22.5	16.5	21.0	13.7	17.6	8.9	26.2	14.4
61	19.3	16.9	21.6	16.0	20.3	14.9	19.3	9.8	27.9	15.5
62	18.6	16.2	20.9	15.4	19.6	16.3	21.2	10.7	29.8	16.7
63	17.9	15.5	20.1	14.9	18.9	17.7	23.2	11.6	31.7	17.9
64	17.2	14.9	19.3	14.3	18.3	19.1	25.2	12.6	33.6	19.0
65	16.5	14.3	18.5	13.8	17.6	20.6	27.4	13.6	35.5	20.1
66	15.9	13.6	17.8	13.3	17.0	22.2	29.7	14.7	37.3	21.2
67	15.2	13.1	17.1	12.8	16.3	23.9	32.2	16.0	39.4	22.5
68	14.6	12.5	16.3	12.3	15.7	25.9	35.0	17.4	41.7	24.2
69	13.9	11.9	15.6	11.8	15.1	28.1	38.1	19.1	44.5	26.3
70	13.3	11.4	14.9	11.4	14.4	30.5	41.5	20.9	47.5	28.8
71	12.7	10.8	14.2	10.9	13.9	33.2	45.2	22.9	50.8	31.4
72	12.1	10.3	13.5	10.5	13.3	35.9	49.0	25.2	54.2	34.1
73	11.6	9.8	12.9	10.0	12.7	38.8	53.0	27.6	57.4	36.6
74	11.0	9.3	12.2	9.6	12.2	41.8	57.0	30.3	60.5	38.9
75	10.5	8.9	11.6	9.2	11.7	45.1	61.5	33.2	63.6	41.1
80	8.0	6.8	8.7	7.2	9.2	68.8	91.0	55.9	87.7	59.9
85	6.0	5.1	6.3	5.7	7.2	107.3	135.1	94.6	124.1	86.9
90	4.4	3.8	4.6	4.5	5.5	158.7	190.6	148.3	166.2	125.1
95	3.3	2.9	3.4	3.6	4.3	229.8	266.2	222.3	225.5	182.8
100	2.7	2.4	2.7	3.2	3.7	291.2	327.8	290.9	256.6	222.8

Source: National Center for Health Statistics.

by Japan (73.7), while Sweden also recorded a value of over 73 years. Next in rank order was Switzerland, Israel, the Netherlands, Hong Kong and Norway—all with longevity between 72 and 73 years. Canada and Australia round out the remaining countries in the top 10.

Among infant girls, the disparity between the nation with the most favorable longevity experience and the United States was much smaller than for boys. Presently, Switzerland recorded the highest life expectancy at birth for newborn girls—79.6 years. In the United States average future lifetime was less than two years lower. Ten years earlier the gap was nearly three years, when life expectancy was 74.6 years in the United States and was 77.5 years in Iceland. At the beginning of this decade, Iceland, the Netherlands, Norway, Japan, Sweden

Chances of Dying, Total Population United States, 1979-81



and Canada all reported female average future lifetime around 79 years. Expectation of life was just one year less in France, Australia and Hong Kong.

Life expectancy gains at birth in the United States far outpaced those in most other countries of low mortality. Analysis of life tables for the 20 countries in this study reveals that for males in the United States the increase during

> Life expectancy gains at birth in the United States far outpaced those in most other countries of low mortality

Table 2—Expectation of Life by Sex and Age Selected Countries With Low Mortality

Country/Year	Male				Female			
	0	25	45	65	0	25	45	65
North America								
Canada (1980-82)	71.87	48.78	30.16	14.56	78.94	55.17	35.99	18.80
United States (1979-81)	70.11	47.37	29.22	14.21	77.62	54.16	35.17	18.44
Europe								
Denmark (1980-81)	71.10	47.70	29.10	13.60	77.20	53.30	34.30	17.60
Finland (1981)	69.53	45.89	27.58	12.83	77.77	53.56	34.26	16.58
France (1981)	70.41	47.34	29.00	13.98	78.47	54.76	35.68	18.17
Germany, F.R. (1979-81)	69.93	47.01	28.49	13.02	76.65	53.11	33.98	16.70
Iceland (1981-82)	73.91	50.34	31.50	15.41	79.45	55.35	36.13	18.48
Netherlands (1981)	72.70	49.20	30.10	14.00	79,30	55.40	36.00	18.50
Norway (1980-81)	72.49	49.06	30.21	14.28	79.23	55.21	35.82	18.10
Sweden (1981)	73.05	49.28	30.52	14.33	79.08	54.96	35.64	17.99
Switzerland (1981-82)	72.70	49.40	30.60	14.60	79.60	55.70	36.40	18.70
United Kingdom								
England & Wales (1980-82)	71.09	47.75	28.73	13.08	77.11	53.33	34.06	17.18
Northern Ireland (1979-81)	69.52	46.44	27.84	12.08	75.12	51.64	32.47	15.85
Scotland (1980-82)	68.98	45.73	27.02	12.15	75.19	51.41	32.27	15.93
Other Areas								
Australia (1981)	71.38	48.29	29.56	13.87	78.42	54.67	35.39	18.07
Hong Kong (1982)	72.69	49.09	30.31	14.76	78.28	54.53	35.33	18.07
Israel (1981)	72.70	49.73	30.77	14.62	75.91	52.55	33.20	16.04
Japan (1981)	73.79	50.17	31.28	14.85	79.13	55.10	35.80	17.93
New Zealand (1982)	70.67	47.79	29.15	13.53	76.86	53.35	34.25	17.54
Singapore (1980)	68.70	45.50	26.80	12.20	74.00	50.60	31.50	15.10

Source: United Nations Demographic Yearbook and National Center for Health Statistics the period under review was 3.1 years—considerably larger than that of 14 foreign nations. Among females, the gain in life expectancy in the United States during the last 10 years was almost three years. The increases in Singapore, Finland, Japan and Switzerland significantly exceeded the gain in our country.

International variations in expectation of life at age 65 are not nearly as pronounced as those at birth. The differences at age 65 between the experience in the United States and the best foreign longevity record was just 1.2 years for men and only 0.4 years for women. Moreover, compared to the standing for newborns, the United States international ranking for aged persons is much higher. Around 1980 the average remaining lifetime at age 65 for United States men ranked ninth internationally, while that for women placed fifth. Iceland reported the best experience for men, with an expectancy of 15.4 years, and Canada recorded the highest value for women—18.8

Implications of the Growing Number of Senior Citizens

In the April-June 1984 issue of the *Statistical Bulletin*, we called attention to the rapidly growing number of persons aged 65 and over in the United States. Updated 1984 figures revealed this group was almost 12 percent of the population, and is projected to increase to 13 percent in 2000, and jump to 22 percent in 2050. Also noted in the earlier article was the rapid expansion of the population aged 85 and over, whether compared to its percentage of the population aged 65 and over, or its relationship to the total population. These phenomena were not surprising because demographically they reflected the projected increase in the senior population. However, little attention was directed to the fact that the recent gains in longevity at the older ages have become a significant proportion of the increase in expectation of life at birth—especially among men (see table).

For 70 years (until 1970), the increment in life expectancy for white men aged 65 represented less than 20 percent of the gain for newborns. Yet, during the 1969-71 to 1979-81 period, the growth in white men's expectancy at age 65 accounted for 40 percent of the gain in longevity at birth. Among white women, the large increases began in the 1940s. In the two immediate decades since 1939-41 the gain in expectation at age 65 for white women rose from 30 to 40 percent of the increase in longevity at birth. Although the relative proportion was as much as four-fifths during the 1960s, in the 1970s the gain in longevity at age 65 was still three-fifths of the increase among infants. Since 1980 there has been no abatement in the relationship.

years. Table 2 presents expectation of life values by selected ages and sex for the countries under review.

The preceding analysis was a comparison of life expectancy in countries with low mortality with that for the United States as a whole. However, in most instances, the composition of the population of foreign countries is homogeneous, whereas the population of the United States can differ widely geographically by variety of ethnic and cultural stock. Thus, there is justification for making comparisons between selected areas of the United States and individual international countries. Based on 1969-71 State Life Tables, the latest available, longevity in selected states is higher or compares very favorably with most of the countries listed in Table 2. The National Center for Health Statistics is now preparing State Life Tables for the 1979-81 period, and, when these tables are released, future *Statistical Bulletin* articles will present the findings. ☐

The consequences of the increasing life expectancy among the elderly will certainly translate into many opportunities as well as potential crises for the provision of social services and for economic planners. The private and public sectors of society must begin to reallocate priorities, in order to meet the many real future needs of this burgeoning and healthier age group, including: special housing, additional medical and nursing facilities, family services, home care, hospice care, and complex financial planning. It may be that much of our present political/economic system will be modified by the process of accommodating the enhanced longevity of elders. Inevitably, private sector retirement programs (including pension plans) as well as the Social Security system will be significantly affected. ☐

Expectation of Life, White Population by Sex, United States, 1959-61 to 1984

Period	Expectation of Life at Birth		Gain in Life Expectancy (From Preceding Period): Age 65 as Percent of Birth	
	Male	Female	Male	Female
1959-61	67.6	74.2	18	41
1969-71	67.9	75.5	13	81
1979-81	70.8	78.2	43	59
1984 (Prov.)	71.8	78.8	31	45

Variations in Mortality from Cancer

Cancer continues to rank No. 2 among the leading causes of death in the United States, and in 1985 it accounted for an estimated 462,000 deaths among Americans.[1] Malignant neoplasms are responsible for approximately one-fifth of all deaths in this country and, as this report shows, mortality rates from these diseases vary markedly by age, sex and geographic area of the country.

Cancer mortality data among men and women are presented in Tables 1 and 2, respectively, for the period 1979-81. The death rates include deaths attributed to all forms of malignant neoplasms (International Classification of Diseases, Ninth Revision, Codes 140 to 208). Death rates per 100,000 population are shown by state and geographic division in four 10-year age groups between 35 and 74 and for ages 35-74 combined. The combined rates have been adjusted for differences in the age distribution in the various states.

Regional Variations

For the period 1979-81, the age-adjusted cancer death rate for men 35-74 was 318 per 100,000 population. Two-thirds of the geographic areas of the country registered mortality rates in excess of this national total; in two of these regions, i.e., East South Central and South Atlantic, the rates were 10 and 6 percent, respectively, above the national average. (Figure page 26). The Middle Atlantic, East North Central, West South Central and New England regions also reported total cancer death rates for males that were above the average.

The lowest mortality rate for men 35-74 was 20 percent below the national rate and was registered in the Mountain region. Rates in both the Pacific and the West North Central areas of the country were also below the average—289 and 292 deaths per 100,000, respectively.

The age-adjusted cancer death rate among females 35-74 was 221 per 100,000, a rate 30 percent lower than that reported for males. The regional distribution and extent of variation in these rates differed considerably between the sexes. (Figure page 26) The highest total cancer death rate for females was recorded in the Middle Atlantic area—8 percent above the national average. Three other regions of the country—the New England, East North Central and Pacific areas—recorded rates ranging from 6 to 2 percent above the average. As with males, female cancer mortality was the lowest in the Mountain states, where the rate was 192 per 100,000, or 13 percent below the total.

> The age-adjusted cancer death rate among females 35-74 was 221 per 100,000, a rate 30 percent lower than that reported for males.

> As with males, female cancer mortality was the lowest in the Mountain states.

Variation by States, District of Columbia

Among males and females 35-74, the highest cancer mortality was registered in the District of Columbia—515 cancer deaths per 100,000 for men and 288 for women. Respectively, these rates were 62 and 30 percent above those for the United States. The mortality rates were the lowest for both sexes in Utah, 205 and 166 per 100,000. Among males at these ages, six states—Delaware, Alabama, South Carolina, Kentucky, Maryland and Louisiana—followed the District with rates at least 10 percent higher than the national average. Including Utah, 19 states reported male cancer mortality rates below 300. Cancer mortality among women

Table 1—Mortality From Malignant Neoplasms Among Men United States, 1979-81

Area	Death Rate per 100,000				
	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	317.7	43.6	188.6	517.5	1,088.4
New England	319.7	43.2	185.6	505.7	1,132.6
Maine	336.4	†	194.2	547.4	1,169.4
New Hampshire	315.5	†	164.7	540.5	1,116.7
Vermont	306.1	†	175.5	458.3	1,118.5
Massachusetts	321.1	42.5	188.7	503.8	1,141.6
Rhode Island	338.3	†	215.1	527.7	1,131.7
Connecticut	309.3	41.8	176.0	486.4	1,109.1
Middle Atlantic	327.9	46.7	192.2	520.8	1,146.7
New York	322.2	47.6	187.1	512.8	1,124.5
New Jersey	332.7	46.3	194.3	519.2	1,183.8
Pennsylvania	332.9	45.6	198.1	532.5	1,155.7
East North Central	326.8	42.3	192.8	534.5	1,126.6
Ohio	339.1	43.4	197.8	554.6	1,175.7
Indiana	328.7	38.2	185.8	549.9	1,145.2
Illinois	336.8	46.0	205.5	541.7	1,152.3
Michigan	319.4	42.6	188.2	518.4	1,104.2
Wisconsin	287.4	34.8	165.9	481.2	987.8
West North Central	292.0	38.7	169.0	471.2	1,022.1
Minnesota	265.3	32.4	150.7	417.6	961.3
Iowa	287.8	40.5	150.3	474.5	1,023.5
Missouri	332.4	47.3	199.9	539.1	1,131.4
North Dakota	255.4	†	145.4	419.1	870.0
South Dakota	250.5	†	131.3	386.1	933.2
Nebraska	287.1	†	181.6	461.4	992.3
Kansas	280.1	35.0	165.1	457.1	971.3
South Atlantic	336.9	49.2	208.6	565.7	1,097.0
Delaware	350.0	†	199.0	563.7	1,237.1
Maryland	362.7	45.0	207.3	591.4	1,274.7
District of Columbia	514.7	†	377.0	855.5	1,523.2
Virginia	347.2	45.0	208.1	573.6	1,179.2
West Virginia	322.5	50.4	188.0	543.2	1,066.4
North Carolina	336.5	51.2	198.3	572.2	1,102.4
South Carolina	352.6	50.1	219.4	600.6	1,134.9
Georgia	343.7	49.3	204.0	581.5	1,135.7
Florida	315.5	49.8	209.1	521.8	996.6
East South Central	349.4	49.0	223.4	583.2	1,132.4
Kentucky	353.9	47.7	224.1	592.8	1,154.1
Tennessee	346.5	46.3	225.2	582.0	1,114.4
Alabama	352.1	52.6	225.8	578.5	1,145.0
Mississippi	344.2	50.8	214.5	578.6	1,114.7
West South Central	320.1	46.6	193.3	524.8	1,075.7
Arkansas	330.1	55.6	207.4	564.1	1,029.7
Louisiana	366.5	56.0	235.4	600.4	1,190.0
Oklahoma	317.7	49.7	180.8	527.9	1,072.6
Texas	305.9	42.0	181.9	494.7	1,053.4
Mountain	253.7	32.1	138.4	412.5	907.9
Montana	266.1	†	151.5	427.5	958.5
Idaho	242.4	†	116.0	382.2	915.2
Wyoming	244.0	†	†	415.9	869.4
Colorado	246.3	32.6	124.2	404.1	895.9
New Mexico	242.9	†	132.8	375.6	899.1
Arizona	269.8	34.9	158.4	454.1	910.9
Utah	204.9	†	108.7	312.7	773.9
Nevada	308.2	†	183.8	494.7	1,083.3
Pacific	288.7	38.0	164.8	463.4	1,021.4
Washington	280.8	37.5	152.1	457.6	1,000.3
Oregon	288.8	37.9	171.0	456.0	1,019.4
California	292.0	38.3	166.7	467.9	1,034.9
Alaska	284.3	†	†	460.3	1,114.2
Hawaii	246.7	†	176.0	399.6	777.3

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 100 deaths; rate not computed.

Source of basic data: Mortality from Division of Vital Statistics, National Center for Health Statistics.

Rates computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company.

Table 2—Mortality From Malignant Neoplasms Among Women United States, 1979-81

Area	Death Rate per 100,000				
	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	221.1	52.6	117.0	359.3	598.5
New England	233.7	52.3	175.1	383.6	649.1
Maine	231.4	55.8	166.0	381.6	646.2
New Hampshire	235.6	†	166.7	404.9	639.5
Vermont	225.8	†	172.1	367.6	616.2
Massachusetts	235.6	52.0	179.4	385.3	652.2
Rhode Island	231.9	†	175.3	368.4	638.4
Connecticut	232.4	48.5	173.1	382.8	655.7
Middle Atlantic	239.2	55.0	184.2	384.6	661.4
New York	241.7	56.7	184.7	391.2	664.7
New Jersey	243.1	52.4	190.4	388.4	679.0
Pennsylvania	233.3	54.1	179.5	373.6	646.9
East North Central	229.4	53.6	177.5	369.6	628.6
Ohio	239.1	58.1	185.1	386.0	647.1
Indiana	227.6	54.7	174.8	371.6	614.3
Illinois	230.9	53.3	179.0	371.6	634.4
Michigan	226.8	52.5	175.8	363.0	626.1
Wisconsin	209.7	44.4	161.6	335.1	593.7
West North Central	204.9	49.7	158.2	329.2	559.0
Minnesota	196.0	42.9	148.4	316.4	552.3
Iowa	201.3	49.8	146.3	333.6	551.2
Missouri	220.4	55.2	177.1	351.1	583.0
North Dakota	193.5	†	127.6	297.3	594.6
South Dakota	199.0	†	165.8	309.4	503.5
Nebraska	204.6	45.9	173.9	311.5	558.5
Kansas	194.9	49.7	142.8	319.9	532.1
South Atlantic	214.8	53.8	171.0	354.5	552.8
Delaware	264.6	†	200.6	433.9	695.7
Maryland	251.4	59.2	193.3	413.4	676.8
District of Columbia	288.0	†	249.5	446.0	744.0
Virginia	221.7	52.6	171.4	359.8	601.3
West Virginia	194.9	51.8	170.4	362.3	388.7
North Carolina	198.2	53.4	155.2	326.2	507.0
South Carolina	205.0	52.7	158.0	341.5	530.8
Georgia	201.5	51.4	160.5	333.1	514.9
Florida	214.2	51.8	173.2	346.8	561.3
East South Central	211.3	57.9	169.7	338.8	541.9
Kentucky	227.7	59.9	188.0	362.9	582.3
Tennessee	207.5	55.8	165.0	340.6	526.6
Alabama	208.8	60.4	167.8	330.5	533.1
Mississippi	198.5	54.7	155.1	313.2	527.6
West South Central	204.3	50.9	160.9	330.6	541.2
Arkansas	196.5	50.9	151.5	317.6	523.6
Louisiana	222.7	58.4	172.3	357.5	594.3
Oklahoma	201.5	47.2	156.1	329.7	543.4
Texas	200.7	49.5	160.0	325.2	528.3
Mountain	191.8	42.7	141.7	317.8	533.7
Montana	210.7	†	152.5	350.5	588.3
Idaho	175.3	†	121.4	292.7	507.3
Wyoming	196.9	†	†	352.6	504.7
Colorado	185.9	38.5	141.9	303.1	522.2
New Mexico	188.5	50.1	135.4	295.4	538.1
Arizona	199.5	46.4	147.5	336.3	539.2
Utah	166.1	†	115.1	266.2	485.4
Nevada	222.7	†	170.2	378.0	603.5
Pacific	224.6	51.1	167.5	365.1	629.8
Washington	219.2	48.6	159.4	359.1	623.6
Oregon	211.2	46.0	158.2	351.2	582.8
California	229.2	52.3	171.8	372.1	640.8
Alaska	202.0	†	†	†	†
Hawaii	171.8	†	129.1	269.4	465.2

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 100 deaths; rate not computed.

Source of basic data: Mortality figures from Division of Vital Statistics, National Center for Health Statistics.

Rates computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company.

35-74 was from 10 to 20 percent higher than the average in three states, New Jersey, Maryland and Delaware. The majority of the states (around 60 percent) reported female cancer mortality between 200 and 240 per 100,000. Fifteen states recorded cancer death rates for these women below 200 per 100,000.

Variation by Age

Cancer mortality rates tend to increase with age, sharply rising after midlife. The 1979-81 increase in cancer deaths by age was slightly more pronounced among males than females. Among males, cancer death rates more than quadrupled between ages 35-44 and 45-54 and more than doubled in the next two 10-year age groupings. Female mortality rates more than tripled between ages 35-44 and 45-54, more than doubled between ages 45-54 and 55-64, and rose by about two-thirds in the oldest age group. While the regions registering the high rates varied by age and sex, the Mountain region recorded the *lowest* cancer mortality rates across all age groups for both sexes.

Cancer mortality rates increase with age, sharply rising after midlife

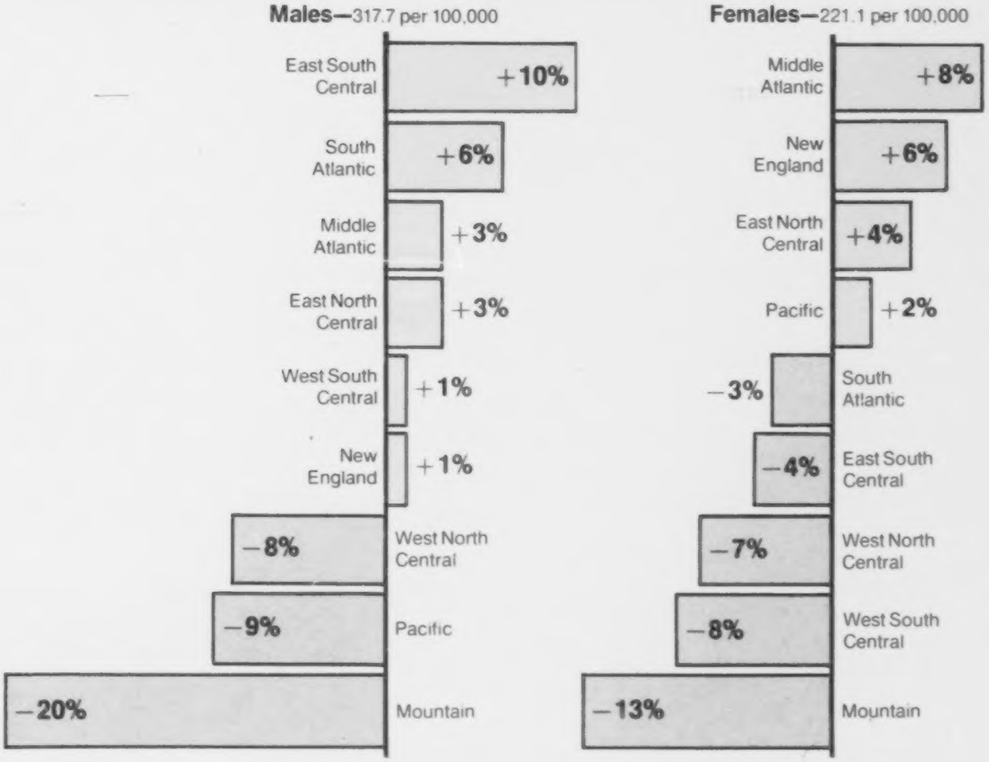
Cancer death rates were higher among women 35-44 than men of this age in every state, with the exception of Arkansas and Oklahoma. Between ages 45-54, however, women's rates were higher than men's in only the Mountain and Pacific regions. Male death rates were higher than those for females in all nine regions among persons 55-64 and 65-74. Cancer mortality rates were 44 percent higher among males than females aged 55-64 and 82 percent higher among males 65-74.

For women 35-44, the highest cancer mortality was registered in the East South Central region—58 per 100,000 or 10 percent above the total for this age group. Among the states with more than 100 deaths, Alabama had the highest female death rate, above 60 per 100,000. The lowest mortality among women in this age group—43 per 100,000 population—was registered in the Mountain region. Among males 35-44, the highest mortality (49 deaths per 100,000) was found in the South Atlantic and East South Central states. The South Atlantic rate was primarily due to the high mortality registered in the District of Columbia (data not shown), where the rate was almost twice that for the entire country. By state, Louisiana and Arkansas registered the second and third highest cancer mortality rates for males at these ages, with rates 56 per 100,000 population. The lowest rates among males 35-44 during this period were found in the Pacific and Mountain regions, with rates 13 and 26 percent below the national total.

The region with the highest death rate among males 45-54 was the East South Central (223 per 100,000) and the region with the lowest male death rate was again the Mountain region (138 per 100,000). Within regions, the rate reported for the District of Columbia was the highest—double that for males in this age group. The second highest mortality for males in this age group was recorded in Louisiana—235 deaths per 100,000. The lowest mortality rate from cancer among these males was found in Utah—109 per 100,000—followed by Idaho and Colorado with rates of below 125 per 100,000. The Middle Atlantic states reported the highest mortality rates among females 45-54, 184 per 100,000, followed by the East North Central and New England regions, each with rates above the U.S. total. The Mountain states reported the lowest rates for these women, 17 percent below the average. Individually, the District of Columbia and Delaware reported the highest mortality, 250 and 201 per 100,000, respectively.

The cancer death rate among males aged 55-64 was 44 percent higher than that among their female counterparts. The highest male mortality was recorded in the East South Central and South Atlantic regions, with rates 13 and 9 percent above the national average. The District of Columbia again recorded the highest individual mortality, almost two-thirds higher than the total for males in this age group. South Carolina and Louisiana followed the District, each recording rates in excess of 600 per 100,000. The Mountain region recorded the lowest mortality rate for this group—a rate approximately 20 percent below the national total. The states with the lowest mortality rates were Utah, New Mexico, Idaho, South Dakota and Hawaii with rates below 400 per 100,000 population. Among

Percent Difference in Cancer Mortality Rates by Geographic Division, United States, 1979-81



Source: Tables 1 and 2

females 55-64, the highest rates—over 360 per 100,000—occurred in the Middle Atlantic, New England, East North Central and Pacific regions of the country. Rates above 400 per 100,000 population were reached in the District of Columbia, Delaware, Maryland and New Hampshire. The lowest rates were recorded in Utah and Hawaii.

In the 65-74 age group, male cancer mortality rates were more than four-fifths higher than those registered for females. The highest mortality rate for males in this age group was reported in the Middle Atlantic region—1,147 per 100,000 population. The New England, East South Central, East North Central and South Atlantic areas registered rates above the average. The District of Columbia reported the highest death rate, 1,523 per 100,000, a rate approximately 40 percent higher than the national total for males in this age group. In Maryland and Delaware, the male rates exceeded 1,230 per 100,000. The lowest mortality was reported in the Mountain region with a rate close to 17 percent below the total. Utah and Hawaii reported the lowest rates, each below 780 per 100,000.

Among women in the 65-74 age group, four regions registered cancer mortality rates above the national total. The Middle Atlantic, New England, Pacific and East North Central regions each reported rates between 629 and 661 per 100,000 population. Death rates were the highest in the District of Columbia and Delaware. The lowest death rates among women in this age group were found in the Mountain region (534 deaths per 100,000) followed closely by the West South Central and East South Central regions, with mortality rates of 541 and 542, respectively. In West Virginia and Hawaii the female cancer mortality was at least 20 percent below the national total.

Rates tend to be higher in urban/industrial areas and in areas where tobacco and alcohol use tend to be prevalent.

These geographic variations in cancer mortality not only reflect the demographics of the country's regions, but also underscore the role played by environmental and life-style factors inherent in the regions that contribute to cancer risk. Rates tend to be higher in urban/industrial areas and in areas where tobacco and alcohol use tend to be prevalent. The differences in the rates between the sexes have been lessening over the years primarily because of the dramatic increases in female respiratory cancer mortality.[2,3] As more Americans become aware of cancer risks associated with certain life-styles, and are more actively involved in health maintenance and preventive medicine, the sooner cancer mortality rates in the different regions of the country will probably start to converge at lower levels. ☐

References

[1] American Cancer Society. *1985 Cancer Facts and Figures*. New York, NY: American Cancer Society, 1985.

[2] "Mortality trends in lung and breast cancer in women." *Statistical Bulletin*, 4-6, Jul-Sep, 1985.

[3] Doll, R., Peto, R. *The Causes of Cancer*. Oxford, New York: Oxford University Press, 1981.

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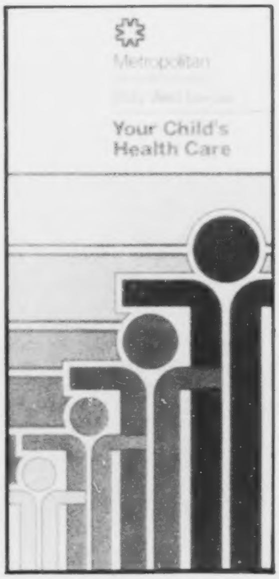
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For further information, write to: Health and Safety Education Division, Dept. SB, Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010.

Coming in Future Issues

- **Regional Variations in Mortality From Colon Cancer**
- **Costs of Cholecystectomies by Geographic Areas**
- **Chances of Celebrating a Golden Wedding Anniversary**
- **Regional Variations in Mortality From Suicide**

Upcoming Event

The 15th International Congress of Life Assurance Medicine will be held

October 12-16, 1986
The Hotel New Otani
Tokyo, Japan

At this conference physicians and actuaries from throughout the world will discuss the advances in life insurance medicine. Official languages will be English and Japanese, simultaneously translated. Registration should be made no later than March 31, 1986. For details, write to:

Secretariat of 15th ICLAM
c/o The Life Insurance Association of Japan
Shinkokusai Building
4-1, Marunouchi 3-chome
Chiyoda-ku, Tokyo 100, Japan

Historical Perspectives

35 YEARS AGO

IN THE 1951 STATISTICAL BULLETIN

At the time of the 1950 census, there were about 15,000,000 American youths aged 14-20 or about one-tenth of the U.S. population. Metropolitan statisticians presented a demographic profile of this segment of the population and disclosed that the proportion of young people enrolled in school fell sharply with maturity. Whereas 84 percent of those aged 14-17 were enrolled, only 29 percent were still in school at ages 18-20 years. (Currently 95 percent of youngsters 14-17 are enrolled in school—ed.) Early age at marriage was evident, particularly for girls—almost 6 percent were married at ages 14-17, and by 18-20 almost 35 percent were married. (In 1984, 2 percent of girls under age 18 and 12 percent of those aged 18-19 were married—ed.) However, the proportion was much lower for young men. It was noted that at age 20, life expectancy was over 50 years. (Life expectancy for a 20-year-old is now 56 years—ed.) (Page 5, May)

Considerable gains had been achieved in U.S. total population life expectancy. Between 1900 and 1948 it had increased by 19 years, mainly because of reduced mortality from the infectious diseases. Future increased longevity would depend on reductions in other causes of death such as cardiovascular-renal diseases, cancer and accidents. The greatest anticipated gain would result from the elimination of cardiovascular-renal diseases—almost 10 years for white men and 9 years for white women. Cancer ranked second, but its control would have added only 1.8 years to the life expectancy of white men and 2.5 years to white women. Years of life saved from any specific causes would depend on the magnitude of the death rate and the average age of death. Accordingly, the eradication of fatal accidents would add 1.8 years for white men and only 0.8 years for white women, reflecting the sex ratio as well as youthful age of accident victims. Researchers and public health administrators were urged to devote more attention to the understanding and control of the chronic diseases, since the greatest opportunity for future gains in life expectancy would depend upon this. (Page 8, March)

Metropolitan statisticians compiled a demographic profile of the American senior citizen population. The number of persons 65 and over had increased by 37 percent during the decade of the 1940s and totaled 12,300,000 by 1950. Although all senior citizens shared certain common experiences, the social and personal problems of elderly women were generally different from those of men in their later years. Among men, two-thirds were still married and less than a quarter were widowers. Among women, however, only 36 percent were married and more than half were widowed. Marked differences also existed in the matter of employment. While over 40 percent of men were employed, the figure was barely 8 percent for women. (Between 1950 and 1984 persons 65 and older in the United States have increased by more than 125 percent and now constitute one-ninth of the total population—ed.) (Page 5, July)

President Truman met with 2,000 delegates from throughout the United States at the President's Highway Safety Conference. He characterized the daily slaughter on the U.S. highways as "unnecessary and inexcusable." In 1950, alone, 35,000 persons died, 1,225,000 were injured and there was an accompanying money loss of about $3 billion. The conferees felt that safety regulations would be ineffective without responsible safety attitudes of pedestrians and drivers. Metropolitan's study revealed that among the company's insured, the death rate from motor vehicle accidents was 15.4 per 100,000 in 1950—an increase of 13 percent over the rate in 1949. Among white male policyholders aged 20-24, the rate was nearly three times that for all ages combined. The Pacific Coast had an especially high motor vehicle accident toll. (Currently, there are over 46,000 motor vehicle fatalities annually—ed.) (Page 10, June)

In the United States, the 1940s had a dramatic upswing in marriages and birth rates, and reduced levels of widowed, divorced or separated persons. Metropolitan statisticians estimated strengthening of family ties occurred, resulting in 1,800,000 fewer marital disruptions in 1950 than if the pre-1950 conditions had prevailed. There was also a decline in the number of separated persons since, with the return of prosperity in the 1940s, they legally dissolved their marriages. Divorced people responded to the favorable conditions for remarriage. Regardless of the disruptive forces in society, there seemed a strong desire for family stability—home and children. (Page 1, March)

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Metropolitan Life
AND AFFILIATED COMPANIES

SB
STATISTICAL BULLETIN

Vol 67 No 2 Apr-Jun 1986

2 **Increased Chances of a Golden Wedding Anniversary.** Why a rising proportion of couples are likely to live to celebrate a marriage milestone.

7 **Regional Variation in Colon Cancer Mortality.** Analysis of geographic differences plus an editorial on prevention by Lawrence Garfinkel, Vice President, American Cancer Society.

16 **Suicide: An Update.** Trend data underscore the true magnitude of this difficult public health challenge.

25 **Costs of Cholecystectomy: Variation by Region.** Do differences point to unnecessary gall bladder surgery? A comparative cost study by state and region.

From The Editor's Desk

The list of cancer sites with major, preventable risk factors grows longer. The foods we eat, scientists agree, are emerging as important sources of environmental risk for cancers of the colon, stomach, uterine corpus, breast and prostate. When the effects of different foods are added to the known effects of tobacco and certain occupational exposures, the list of sites with preventable factors is impressive.

Prevention a Cure for Some Cancers?

In this issue colon cancer deaths are discussed by *SB* staff, with notable regional differences observed that are likely related to environmental effects. And in an editorial, Lawrence Garfinkel, vice president for epidemiology and statistics, and director of cancer prevention, the American Cancer Society, provides *SB* readers with an insider's glimpse of cancer prevention. The message is clearly good news.

The question before the public seems equally clear: will Americans embrace risk reduction in cancer with the same enthusiasm as they did heart disease risk? If so, there is good reason to be optimistic about cancer prevention in the twenty-first century. May it be so.

Living Longer With Love

Americans are living longer, and the beneficiary of this increased longevity is marriage. A rising proportion of those who have remained married to the same spouse are likely to survive to a 50th wedding anniversary. *SB's* lead article might provide a personal estimate for you.

Deaths from suicide are among the least discussed and most feared and frustrating events for involved families and for society. Often, especially in men, these deaths come without any warning. Statistical analysis also poses dilemmas. There are time trends, usually related to adverse economic events, but not much more. This quarter *SB* analyzes suicide deaths in the United States in the recent past, because they are a leading cause of death in the United States. Perhaps you have an insight that could contribute to our greater understanding. If so, we hope you will share it with us.

Unnecessary Surgeries?

Had your gall bladder out recently? If you did, you are one among many. In *SB's* continuing analysis of surgical procedures that often require a second opinion, cholecystectomy surgery is singled out in this issue. How do charges in your state compare to your region, the country?

On that quizzical note, I shall wish you good reading. □

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

Increased Chances of a Golden Wedding Anniversary

The chances that a newly married couple will celebrate a golden wedding anniversary have increased significantly since the turn of the century. The likelihood that today's typical bride and groom will both survive the next 50 years is 2¼ times higher than the chances during 1900-02. Moreover, within the past decade, the probability of a golden wedding anniversary for this typical couple increased by 26 percent. However, joint survival for 50 years does not necessarily mean that the couple will celebrate this anniversary. Marriages may be dissolved by divorce or annulment, and these methods of dissolution have recently become more frequent.

The likelihood that today's typical bride and groom will both survive the next 50 years is 2¼ times higher than the chances during 1900-02.

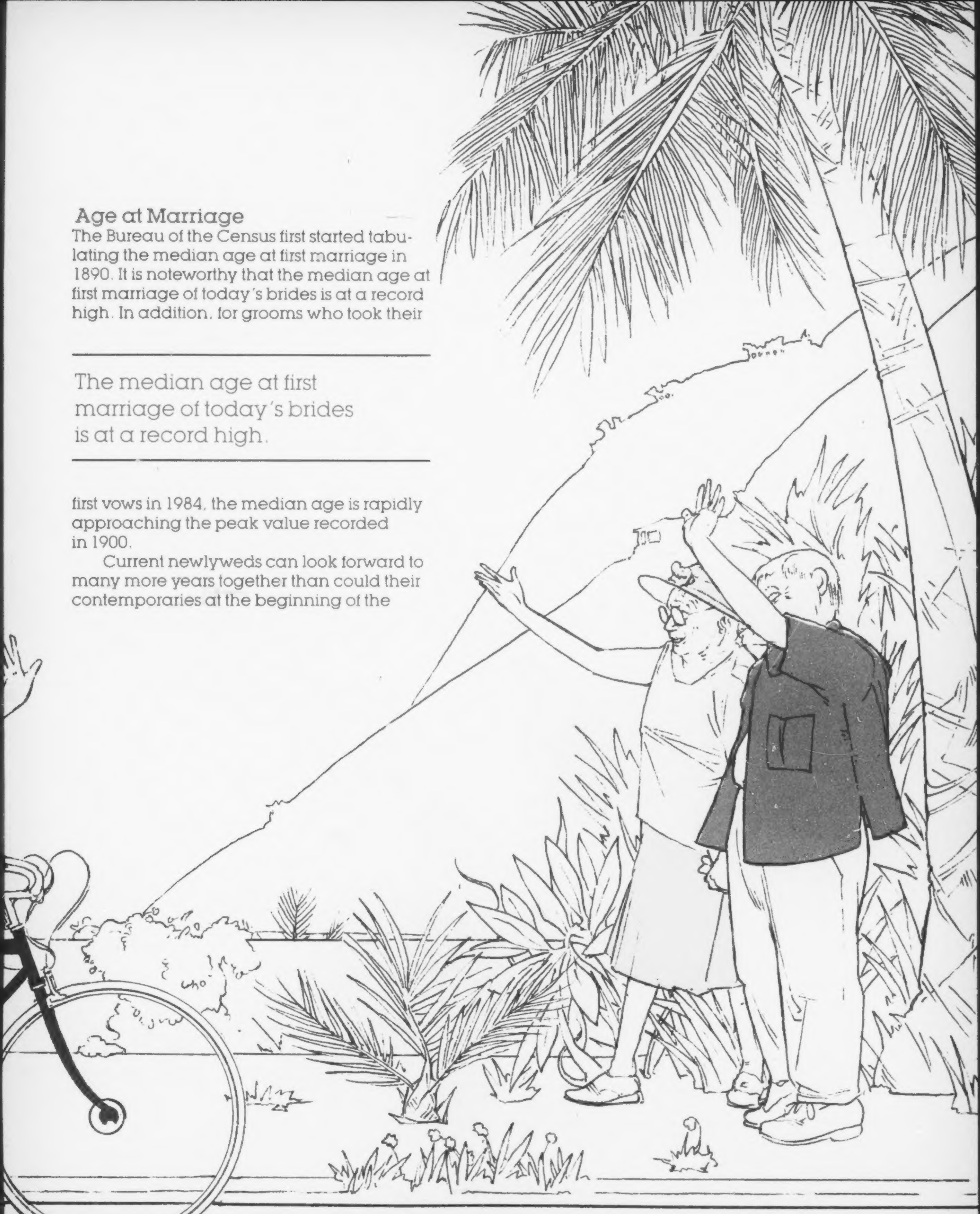
Based on the United States 1979-81 general population life tables for all men and women, the chances for mutual survival for an additional 50 years for a man aged 25 who marries a woman aged 23 (the median age at first marriage in 1984) are 350 in 1,000 compared with only 108 in 1,000 in 1900-02. At the beginning of the century the median age at first marriage for a groom was 26 and for a bride, 22. The likelihood that both would live another half century was 105 in 1,000. In 1979-81 the probability of joint survival for a couple at these ages was 337 in 1,000, up from 266 in 1,000 a decade earlier.

Age at Marriage

The Bureau of the Census first started tabulating the median age at first marriage in 1890. It is noteworthy that the median age at first marriage of today's brides is at a record high. In addition, for grooms who took their first vows in 1984, the median age is rapidly approaching the peak value recorded in 1900.

> The median age at first marriage of today's brides is at a record high.

Current newlyweds can look forward to many more years together than could their contemporaries at the beginning of the



David Johnson

century. Thus the potential* duration of marriage for a groom of 25 and a bride of the same age is now 42.6 years—a gain of fully 13 years since 1900-02. There is also a considerable increase in the average anticipated years together for newlyweds both 20 years of age. Today this couple can expect 47 years of married life compared with 44.5 years in 1969-71 and 32.6 years in 1900-02.

Because men generally do not marry women the same age, the disparity in a couple's ages has a substantial effect on the length of their married life. For example, based on the 1979-81 tables, if the 25-year-old male in the above scenario would have married a 30-year-old female instead of a 25-year-old female, their likelihood of joint survival would be diminished by two years. The difference in age at marriage on the effect of years together is also reinforced by the case where the groom is aged 35 and the bride aged 30. On the average, they can expect another 35 years of joint survival; however, if the bride was two years older than the groom, the remaining lifetime together would fall to 32.9 years. Older grooms can also expect a long married life. In the event that a groom is 50 years of age at the time of marriage and his bride is the same age or as much as five years younger, about 22 years of married life remain on the average. It is interesting to note that if a man of 65 marries, he can expect to live together with his wife for at least 11 years if she is the same age as he or younger. Table 1 presents the joint expectation of life for couples of selected ages in 1979-81 and 1900-02.

It is of general interest to ascertain the chance of celebrating a golden or silver wedding anniversary. Not unexpectedly, the chances of joint survival for 50 years are most favorable for young couples and decrease rapidly with advance in age at marriage. Currently when a bride and groom are both 20 years of age, the chances of joint survival are 479 per 1,000, fall to 330 per 1,000 when both are 25 and further decline to 186 at age 30. The chances of a golden wedding anniversary in the case where the male is aged 40 or older are less than two in 100. Golden wedding anniversaries are more likely to be celebrated in those instances when the bride is younger than the groom. Thus when the groom is aged 25 and the bride aged 23, the chance of the event taking place is 350 in 1,000. The probability rises to 375 in 1,000, if the bride is aged 20.

Silver Celebrations

The improvement in survival since 1900 also means that a very high proportion of young couples will celebrate a silver wedding anniversary. If the groom is aged 24 or less at the time of marriage and his bride is two years or more younger, 900 in 1,000 can look forward to celebrating the happy event. The probabilities are almost as great for men who marry between ages 25 and 30. For men who marry as late as 40, the chances of a silver wedding anniversary are also very favorable.

> It is almost certain that today's newlyweds will survive the next 10 years.

It is almost certain that today's newlyweds will survive the next 10 years. As Table 2 shows, the probability of joint survival for this length of time for the couples selected in this study ranged from 924 in 1,000 to as high as 976 in 1,000. At the turn of the century the chances for this event were 10 to 15 percent less. □

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*Differs from expected duration of marriage in that the figure applies only to marriages dissolved by death and does not make allowance for divorce or annulment.

Table 1–Years of Joint Expectation of Life for Men and Women United States, 1900-02 and 1979-81

Age of Male	When Male is **Younger** Than Female by (Years)		**Male Same Age as Female**	When Male is **Older** Than Female by (Years)					
	5	2		2	3	4	5	10	15
1979-81									
18	46.9	48.1	**48.8**	49.4	49.7	—	—	—	—
19	46.0	47.2	**47.9**	48.5	48.8	49.1	—	—	—
20	45.1	46.3	**47.0**	47.6	47.9	48.2	48.4	—	—
21	44.2	45.4	**46.1**	46.7	47.0	47.3	47.5	—	—
22	43.4	44.5	**45.2**	45.8	46.1	46.4	46.6	—	—
23	42.5	43.7	**44.3**	45.0	45.2	45.5	45.7	—	—
24	41.6	42.8	**43.5**	44.1	44.4	44.6	44.9	—	—
25	40.7	41.9	**42.6**	43.2	43.5	43.7	44.0	45.0	—
26	39.8	41.0	**41.7**	42.3	42.6	42.8	43.1	44.1	—
27	38.9	40.1	**40.8**	41.4	41.7	42.0	42.2	43.2	—
28	38.0	39.2	**39.9**	40.5	40.8	41.1	41.3	42.3	—
29	37.1	38.3	**39.0**	39.6	39.9	40.2	40.4	41.4	—
30	36.2	37.4	**38.1**	38.7	39.0	39.3	39.5	40.5	41.2
35	31.8	32.9	**33.6**	34.2	34.5	34.8	35.0	36.0	36.7
40	27.4	28.5	**29.2**	29.8	30.0	30.3	30.5	31.5	32.2
45	23.3	24.3	**25.0**	25.5	25.8	26.0	26.2	27.2	27.8
50	19.4	20.4	**21.0**	21.5	21.7	22.0	22.2	23.1	23.7
55	15.9	16.8	**17.3**	17.8	18.0	18.2	18.4	19.3	19.9
60	12.8	13.6	**14.0**	14.5	14.7	14.9	15.1	15.8	16.3
65	10.0	10.7	**11.2**	11.5	11.7	11.9	12.1	12.7	13.2
1900-02									
18	32.3	33.2	**33.9**	34.5	34.8	—	—	—	—
19	31.6	32.6	**33.2**	33.8	34.1	34.4	—	—	—
20	31.0	32.0	**32.6**	33.1	33.4	33.7	34.0	—	—
21	30.4	31.4	**31.9**	32.5	32.8	33.1	33.3	—	—
22	29.8	30.8	**31.3**	31.9	32.2	32.4	32.7	—	—
23	29.3	30.2	**30.8**	31.3	31.5	31.8	32.1	—	—
24	28.7	29.6	**30.2**	30.7	30.9	31.2	31.4	—	—
25	28.1	29.0	**29.6**	30.1	30.3	30.6	30.8	32.0	—
26	27.5	28.4	**29.0**	29.5	29.8	30.0	30.2	31.3	—
27	26.9	27.9	**28.4**	28.9	29.2	29.4	29.6	30.7	—
28	26.4	27.3	**27.8**	28.3	28.6	28.8	29.0	30.0	—
29	25.8	26.7	**27.2**	27.8	28.0	28.2	28.4	29.4	—
30	25.2	26.1	**26.7**	27.2	27.4	27.6	27.8	28.8	29.7
35	22.3	23.2	**23.8**	24.3	24.5	24.7	24.9	25.8	26.6
40	19.3	20.3	**20.9**	21.4	21.6	21.9	22.1	23.0	23.6
45	16.4	17.4	**18.0**	18.5	18.7	19.0	19.2	20.1	20.7
50	13.6	14.5	**15.1**	15.6	15.9	16.1	16.3	17.2	17.8
55	11.0	11.9	**12.4**	12.8	13.1	13.3	13.5	14.4	15.0
60	8.7	9.5	**9.9**	10.4	10.6	10.7	10.9	11.7	12.3
65	6.7	7.3	**7.7**	8.1	8.3	8.5	8.6	9.3	9.8

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company from life tables prepared by the Bureau of the Census and the National Center for Health Statistics.

Table 2–Chances in 1,000 of Joint Survival for 10, 25, or 50 Years United States, 1900-02 and 1979-81

Age of Male	Years of Joint Survival											
	10	25	50	10	25	50	10	25	50	10	25	50
	Female Five Years Younger			Female Two Years Younger			Female Same Age as Male			Female Two Years Older		
1979-81												
18	—	—	—	976	932	552	975	925	535	975	921	515
19	976	927	547	975	924	525	975	921	507	974	917	487
20	975	924	520	975	920	497	974	917	479	974	913	458
21	975	920	492	974	916	469	974	912	450	974	908	429
22	975	915	464	974	911	440	974	907	420	973	902	398
23	975	911	435	974	906	410	974	901	390	973	896	368
24	975	905	405	974	900	380	974	895	360	973	889	337
25	974	899	375	974	893	350	973	888	330	972	881	307
26	974	892	345	973	885	320	973	879	300	972	872	277
27	974	884	316	973	877	290	972	870	270	971	863	248
28	973	876	286	972	867	261	971	860	241	969	852	219
29	972	866	257	971	857	232	970	849	213	968	840	191
30	971	855	229	969	845	205	968	837	186	966	828	165
35	960	786	106	957	772	88	954	761	74	951	748	60
40	933	689	32	933	670	23	929	655	18	924	638	13
1900-02												
18	—	—	—	884	677	229	879	670	212	875	663	194
19	888	681	233	879	669	210	874	662	194	870	655	176
20	883	672	214	874	661	192	870	654	176	866	647	158
21	878	664	196	870	653	174	866	646	158	863	639	141
22	873	655	178	867	645	157	863	638	141	860	631	125
23	869	647	161	863	637	140	860	630	125	857	623	109
24	865	639	143	860	629	124	857	622	109	854	614	94
25	862	630	127	857	620	108	854	613	94	851	604	80
26	858	622	111	853	612	93	850	604	80	848	594	67
27	854	613	96	850	602	79	847	594	67	844	584	55
28	850	604	81	846	592	66	844	583	55	841	572	45
29	847	594	68	843	582	54	840	572	45	837	560	35
30	843	583	56	839	570	44	837	559	35	834	546	27
35	825	516	16	821	497	11	817	482	8	813	465	5
40	801	428	2	795	405	1	789	386	1	782	364	*

*Less than 1.

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company from life tables prepared by the Bureau of the Census and the National Center for Health Statistics.

Regional Variation in Colon Cancer Mortality

The colon is one of the most common sites of cancer in populations in developed countries. An estimated 51,800 deaths from this malignancy will be registered in the United States in 1986, making it the nation's second leading cause of cancer mortality.[1] Colon cancer is expected to claim the lives of 24,800 men and 27,000 women—only lung cancer for both sexes and prostate cancer for men and breast cancer for women will account for more deaths from cancer in 1986. The past 30 years have seen little change in the death rates for men, but a sizable decrease of 27 percent for women.[2]

Colon cancer is expected to claim the lives of 24,800 men and 27,000 women in 1986.

The past 30 years have seen little change in the death rates from colon cancer for men, but a sizable decrease of 27 percent for women.

There is much geographic variation in colon cancer rates. The incidence of colon cancer is very low in Japan, other Asian countries, Finland and many developing countries as well. The incidence rates for migrants from these countries increase and approach those of Western cultures, however, in natives who emigrate to America. The adoption of a more Western lifestyle seems to be the source of increased risk, particularly when it includes a diet higher in fat and lower in fiber than was the custom in the native country. This association with diet may be a significant element in the etiology of this disease, one with obvious enormous preventive potential.

Regional Distribution of Colon Cancer Mortality

Colon cancer mortality rates differed both between the sexes and by geographic area. The following regional analysis of colon cancer mortality among whites is based on the 1980 population census and deaths that occurred in 1979, 1980, and 1981. The colon cancer data are for the period 1979-81, inclusive, and are those deaths assigned to International Classification of Diseases, Ninth Revision, Code 153. These data represent the latest years for which official figures are available and with which Metropolitan Life statisticians could compute rates by individual states and divisions within the country. Mortality rates are shown per 100,000 population in four 10-year age groupings between 35 and 74 and for the ages 35-74 combined. The combined death rate has been age-adjusted because of differences in the age composition of state populations.

Variation in Rates by Geographic Division

Colon cancer mortality rates are higher for white males than white females (Table 1, page 8). The age-adjusted death rate for males 35-74 was 32 percent higher than that for females. By age groups, male mortality rates were 11 percent higher than

The age-adjusted death rate for males aged 35-74 was 32 percent higher than that for females.

Table 1–Mortality from Colon Cancer White Men Aged 35-74, United States, 1979-81

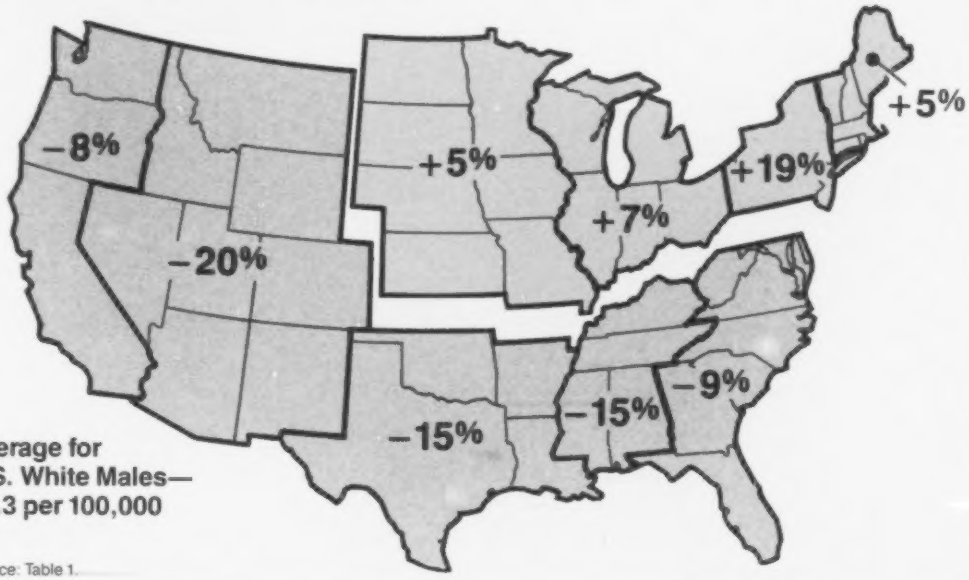
Area	Death Rate per 100,000				
	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	27.3	3.1	13.1	42.4	106.1
New England	28.8	3.0	12.6	42.4	119.8
Maine	26.9	†	9.9	40.6	108.3
New Hampshire	26.9	†	9.8	41.1	116.7
Vermont	26.2	†	†	30.3	117.1
Massachusetts	29.4	2.9	13.4	44.0	120.3
Rhode Island	30.4	†	12.7	42.2	132.8
Connecticut	29.0	2.5	13.6	42.3	120.6
Middle Atlantic	32.6	3.0	14.4	50.9	131.4
New York	33.1	3.5	14.1	51.9	133.0
New Jersey	32.8	2.5	13.5	49.0	139.8
Pennsylvania	31.9	2.7	15.5	50.7	124.7
East North Central	29.2	3.0	14.4	46.0	112.8
Ohio	29.4	3.1	14.3	46.9	112.8
Indiana	27.9	2.7	14.0	42.9	109.5
Illinois	31.7	2.9	15.2	47.1	128.8
Michigan	28.1	3.0	14.5	45.1	105.2
Wisconsin	26.8	3.1	13.4	46.2	95.3
West North Central	28.8	3.9	13.9	49.2	102.9
Minnesota	34.9	3.4	13.2	85.0	95.1
Iowa	29.4	3.4	15.4	47.0	109.0
Missouri	28.9	4.6	14.7	44.2	107.6
North Dakota	25.0	†	†	49.2	82.8
South Dakota	23.2	†	10.9	32.5	92.3
Nebraska	28.4	†	14.5	43.8	112.1
Kansas	26.5	4.6	13.2	39.4	100.8
South Atlantic	24.9	2.9	12.3	38.5	96.6
Delaware	32.8	†	13.9	50.3	123.3
Maryland	31.4	2.7	15.2	47.2	127.2
District of Columbia	26.1	†	†	47.5	102.0
Virginia	24.2	2.1	13.8	36.6	92.4
West Virginia	22.0	†	14.3	33.5	78.4
North Carolina	22.4	4.1	10.9	32.5	86.3
South Carolina	24.0	3.6	11.3	40.9	85.9
Georgia	19.2	1.5	9.2	30.8	75.2
Florida	26.6	3.4	12.6	41.4	102.7
East South Central	23.3	3.2	12.3	37.1	85.3
Kentucky	28.3	3.4	15.7	44.7	103.4
Tennessee	22.1	2.0	11.6	36.0	82.4
Alabama	19.9	4.1	8.2	31.0	75.5
Mississippi	23.3	4.3	16.5	35.8	73.6
West South Central	23.1	3.8	11.8	34.7	87.2
Arkansas	19.8	3.7	9.8	31.1	71.9
Louisiana	26.5	5.0	15.7	39.0	93.7
Oklahoma	22.9	3.2	9.8	31.7	96.7
Texas	23.0	3.6	11.6	35.1	86.5
Mountain	21.9	2.4	12.5	32.0	83.8
Montana	25.5	†	16.0	31.4	103.0
Idaho	18.2	†	10.2	28.5	65.6
Wyoming	16.2	†	†	31.9	48.4
Colorado	22.2	3.2	12.2	32.2	84.5
New Mexico	22.0	†	11.0	26.5	97.9
Arizona	22.7	2.9	13.8	32.6	84.6
Utah	18.9	†	8.7	33.1	71.4
Nevada	25.7	†	16.8	39.0	97.0
Pacific	25.2	3.0	11.2	37.8	101.9
Washington	21.3	2.9	8.8	34.7	82.6
Oregon	24.0	2.7	10.2	35.5	99.5
California	26.2	3.1	12.0	38.7	106.4
Alaska	17.5	†	†	36.9	†
Hawaii	24.5	†	†	39.9	98.8

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 10 deaths; rate not computed.

Source: Computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

Figure A–Geographic Variation in Colon Cancer Mortality White Males Aged 35-74, 1979-81



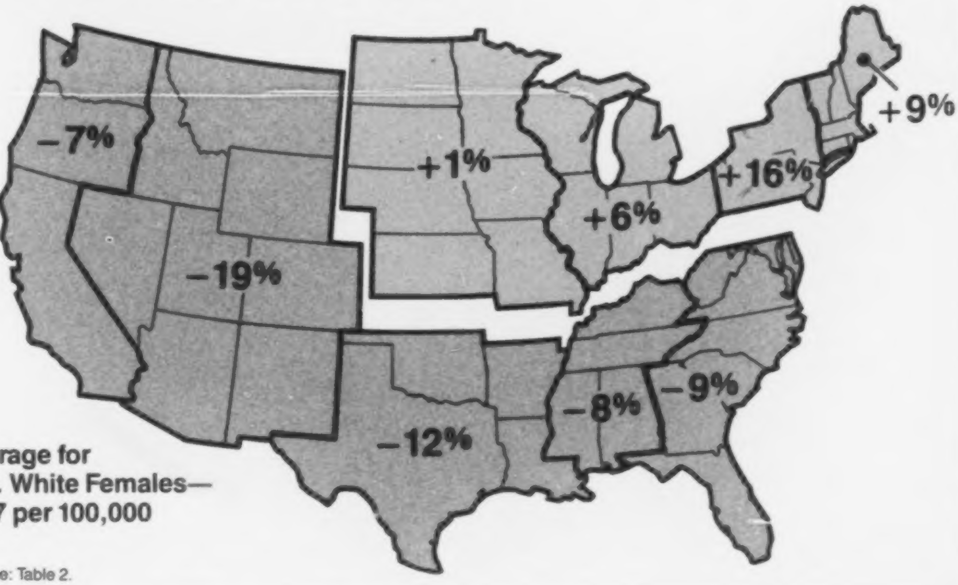
Source: Table 1.

female rates among the 35-44 year olds, 12 percent higher among 45-54 year olds, 29 percent higher among 55-64 year olds and 43 percent higher among 65-74 year olds.

Mortality rates increased with age, reaching a high of 106.1 per 100,000 for males and 74.0 for females 65-74. The rate of increase was the greatest between 35-44 and 45-54 age groups, where the rates quadrupled for both sexes. The rate of increase slowed with each succeeding age group, thereafter, with some slight regional differences apparent. Mortality rates from colon cancer varied appreciably from one geographic area of the United States to another. The geographic distribution of the age-adjusted death rates for colon cancer were similar for white males and white females 35-74 (Figures A and B). For each sex, the same four divisions within the United States registered rates in excess of the national total of 27.3 per 100,000 population for males and 20.7 for females. The Middle Atlantic states recorded the highest rates and the Mountain division recorded the lowest rates for both sexes.

The Middle Atlantic area recorded a rate 19 percent above the national rate for men (Figure A) and 16 percent above the national rate for women (Figure B). The East North Central division recorded the second highest rate for males (29.2 per 100,000—a rate 7 percent above the total) and the New England states ranked second in colon cancer mortality rates for females (22.6 or 9 percent above the total). The Mountain area

Figure B–Geographic Variation in Colon Cancer Mortality White Females Aged 35-74, 1979-81



Average for U.S. White Females—20.7 per 100,000

Source: Table 2.

death rates were 20 and 19 percent lower than the U.S. total for males and females, respectively.

Variation in Rates for Males by State

The age-adjusted death rate also differed substantially between states. Among men 35-74, the rate reported in Minnesota (34.9 per 100,000) was 115 percent higher than the lowest, which was reported in Wyoming (16.2 per 100,000). The second highest rate was reported in New York, where the rate for these men was 21 percent above the national rate. Other states in which the male age-adjusted mortality was at least 20 percent above the total for the country were New Jersey and Delaware. The death rate in Alaska was the second lowest in the country and was 36 percent below the national total for males 35-74. Similarly low mortality was experienced in Idaho, Utah, Georgia, Arkansas and Alabama, each with rates at least 27 percent below the total.

The rates among the two younger groups of men fluctuated considerably because of the small numbers of deaths involved. Among white men 55-64, Minnesota registered the highest death rate—85.0 per 100,000—a rate that was more than twice the national rate for this age group. New York, Pennsylvania and Delaware each recorded rates above 50.0. The lowest rates for these men were registered in New Mexico and Idaho, where the mortality rate

Table 2– Mortality from Colon Cancer White Women Aged 35-74, United States, 1979-81

Area	Death Rate per 100,000				
	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	20.7	2.8	11.7	32.9	74.0
New England	22.6	2.3	11.9	35.5	85.5
Maine	22.4	†	11.7	35.9	84.5
New Hampshire	25.0	†	10.3	45.9	94.3
Vermont	20.9	†	†	34.1	79.5
Massachusetts	21.8	2.2	11.8	33.5	83.3
Rhode Island	24.9	†	13.6	38.3	91.8
Connecticut	23.0	2.9	12.0	35.6	86.5
Middle Atlantic	24.1	2.6	13.6	38.4	88.0
New York	24.6	2.8	13.3	39.5	90.4
New Jersey	24.6	1.9	13.4	40.7	90.4
Pennsylvania	23.3	2.8	14.2	35.9	83.4
East North Central	22.0	3.0	11.7	34.4	81.4
Ohio	23.7	3.6	13.1	36.4	86.0
Indiana	22.7	4.5	11.5	35.5	80.7
Illinois	22.1	2.1	11.2	35.3	84.3
Michigan	20.3	2.8	11.4	29.7	76.7
Wisconsin	20.6	2.2	10.6	35.3	73.7
West North Central	21.0	3.7	12.8	33.5	70.2
Minnesota	19.8	3.2	11.9	34.4	62.8
Iowa	25.4	3.3	15.8	42.5	84.1
Missouri	20.7	4.1	12.6	31.0	70.7
North Dakota	18.2	†	†	28.2	72.5
South Dakota	19.7	†	16.0	23.2	67.4
Nebraska	20.1	4.3	12.2	31.3	65.9
Kansas	19.8	4.6	11.1	31.0	66.2
South Atlantic	18.9	2.8	10.9	30.8	64.8
Delaware	26.7	†	†	49.2	104.2
Maryland	24.9	1.8	12.7	42.4	91.9
District of Columbia	15.2	†	†	†	58.6
Virginia	17.5	2.7	11.3	27.4	58.8
West Virginia	17.0	†	11.2	26.6	56.2
North Carolina	16.6	2.9	10.3	26.9	54.4
South Carolina	17.5	3.3	10.4	28.0	58.2
Georgia	17.2	3.1	10.4	27.4	57.0
Florida	19.4	3.1	10.6	31.9	67.0
East South Central	19.1	3.1	11.4	29.7	65.9
Kentucky	21.8	2.8	13.0	35.3	75.2
Tennessee	19.6	3.4	12.0	29.0	69.4
Alabama	15.9	2.3	8.8	26.1	55.5
Mississippi	17.9	4.2	11.1	27.2	58.5
West South Central	18.2	2.9	10.8	28.1	63.8
Arkansas	17.9	4.2	11.5	26.1	59.2
Louisiana	19.0	3.0	10.6	29.7	68.0
Oklahoma	19.7	†	11.2	30.1	74.4
Texas	17.6	2.8	10.6	27.5	60.8
Mountain	16.8	2.5	9.3	27.0	59.5
Montana	18.5	†	10.4	33.2	62.7
Idaho	15.7	†	10.9	26.5	51.2
Wyoming	16.9	†	†	27.8	55.3
Colorado	19.1	2.8	10.9	30.8	66.5
New Mexico	15.4	†	†	25.8	53.7
Arizona	15.8	†	7.1	25.3	62.1
Utah	15.4	†	†	25.5	54.1
Nevada	15.8	†	16.0	19.3	50.5
Pacific	19.2	2.3	10.9	30.6	68.7
Washington	18.1	2.0	9.3	29.5	67.0
Oregon	18.0	†	12.0	28.6	60.7
California	19.6	2.4	11.1	31.2	70.2
Alaska	15.5	†	†	†	†
Hawaii	17.9	†	†	37.1	49.8

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 10 deaths; rate not computed.

Source: Computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

was 38 and 33 percent, respectively, below the average. For white males 65-74, the rate in New Jersey was 32 percent higher than the total for this group. New York and Rhode Island each reported rates 25 percent above the total. The lowest rate for these men was reported in Wyoming, where mortality was 54 percent lower than the average

Variation in Rates for Females by State

The age-adjusted geographic death rates for women 35-74 differed by as much as 176 percent. The highest rate was reported in Delaware (26.7 per 100,000) and the lowest (15.2) was reported in the District of Columbia. Four other states registered mortality rates 20 percent or more above the national total, i.e., Iowa, New Hampshire, Rhode Island and Maryland. Other states in which female mortality rates were at least 25 percent below the national average were New Mexico, Utah and Alaska.

Substantial between-state variation was apparent within the four age groups studied. Among white women 35-44, the mortality rate was the highest in Kansas (4.6 per 100,000) and the lowest in Maryland (1.8). These rates were 64 percent above and 36 percent below the average rate of 2.8 for this age group. Among the oldest group of women in this study, the mortality rate per 100,000 in Delaware (104.2) was the highest and this rate was 41 percent above the average for this group. Other states in which the rates for women 65-74 were 20 percent or more above the average of 74.0 were New Hampshire, Maryland, Rhode Island, New York and New Jersey. Hawaii recorded the lowest colon cancer death rate per 100,000 among women 65-74—49.8—with a rate 33 percent below that for the average of all white women in this age group. Nevada and Idaho recorded similarly low rates (50.5 and 51.2); five other states reported a death rate at least 25 percent below the average, i.e., New Mexico, Utah, Wyoming, Alabama and North Carolina. The prognosis for colon cancer patients is very good when the disease is detected in a localized stage. If, however, the disease has spread, five-year survival rates drop from 87 to 47 percent, a fact that underscores the importance of early detection. Simple early detection methods are available and the American Cancer Society recommends that asymptomatic patients have the following procedures performed at designated intervals:

- —an annual stool blood test for everyone over 50 years of age and
- —a proctoscopy every three to five years after 50, once two annual examinations with negative results have occurred.

If the disease has spread, five-year survival rates drop from 87 to 47 percent, a fact that underscores the importance of early detection.

As indicated above, early detection of colon cancer can result in less complicated treatment regimens and can improve survival rates. In addition to these secondary preventive actions, research is now suggesting some primary prevention measures to be taken to reduce the risk of colon cancer. Modification of the diet to include *more* high fiber and *less* high-fat foods may lead to a reduction in risk of colon as well as some other cancers. ☐

References

[1] Silverberg, E., Lubera, J. "Cancer statistics, 1986." *Ca A Cancer Journal for Clinicians.* 36(1) 9-25, Jan/Feb 1986

[2] American Cancer Society. *1985 Cancer Facts and Figures.* New York. American Cancer Society, 1985

Guest Editorial

Preventing Cancer

The problem with cancer prevention is not cancer, but rather the outmoded public perception of it. Specifically, Americans do not seem to know that cancer is mostly a preventable disease and that its risks can be substantially reduced by modifying lifestyles and certain exposures.

Cancer is not the inevitable disease that it once was. Indeed, scientists estimate that from 50 to 90 percent of all cancers are promoted or caused by various personal and environmental factors. And further, at least 50 percent of cancers are preventable if we could take action on a simple, three-part message.

Smoking

First, stop smoking. Cigarette smoking causes about one-third of *all* cancers and 83 percent of lung cancers. Other sites affected by tobacco usage include the oral cavity and pharynx, larynx, esophagus, pancreas and bladder. Cigarette smoking coupled with excessive alcohol intake further increases certain cancer risks. Pipe and cigar smokers have lower risks than cigarette smokers but still higher than that for nonsmokers.

Dietary Constituents

Second, pay close attention to dietary constituents. A diet high in fat and calories and low in fiber and certain micronutrients and vitamins is associated with 10 to 35 percent of all cancers. Obesity is associated with endometrial, gall bladder, cervix, ovary, breast and colon cancer. Evidence is mounting which suggests that foods rich in beta-carotene, such as carrots, various green and yellow vegetables, reduce the risk of cancer and that vitamin C consumption may lower the risk of developing cancer of the esophagus and bladder.

Workplace Hazards

Third, be aware of workplace hazards. Industrial pollution of the occupational environment with certain dusts and fumes may be associated with another five percent of all cancers. Asbestos exposure increases the risk of lung and gastrointestinal cancers as well as mesothelioma. Exposure to vinyl chloride, chromates, benzene, aromatic amines and bischloromethyl ether are other substances that have been shown to increase cancer risks. Some of these exposures in conjunction with tobacco usage further add to the risks of developing cancer.

There are other factors that contribute to cancer risk, as well. They include reproductive and sexual behavior, certain infections, drugs, ionizing radiation, air and water pollution and various consumer products. Taken as a group, these factors may account for approximately 15 percent of the cancers at various sites.

Public Awareness

Despite the work yet to be done, we have made much progress, however, in cancer health education. Public and private resources have been mobilized to persuade the public to adopt more healthful lifestyles, i.e., not smoking, moderate alcohol intake, avoiding workplace carcinogens. Through these efforts, an estimated 37 million Americans have quit smoking and the public has become more weight, nutrition, and fitness conscious. In only 30 years we have changed from a pessimistic to a more hopeful view of how we can reduce the risk of cancer. If public awareness about cancer risks continues to increase, we could near an exciting goal: preventing those cancers that are, indeed, preventable. □

Lawrence Garfinkel
Vice President for Epidemiology
and Statistics/Director of Cancer Prevention
American Cancer Society

Capsule Briefs

are timely literature selections with broad reader interest.

Death (Certificate) Here Is Thy Sting

Death certificates incorrectly noted underlying causes of death in 29 percent of cases, or disagreed on the specific disease causing the fatality in another 26 percent. These conclusions were reached by the authors in a Connecticut study of 272 randomly selected 1980 autopsy reports. Deaths due to neoplasms (cancer) were most accurately diagnosed; those due to diseases of the respiratory or digestive systems showed the highest rates of disagreement. In an era in which medical data are increasingly used to evaluate care, "the autopsy remains an important method for ensuring the quality of mortality statistics." (Kircher, T., *et al, New England Journal of Medicine* 313:1263-9, 1985.)☐

Whither Medical Care in the 1990s?

This report is from a fascinating meeting convened by Eli Ginsberg and held at Cornell University Medical College in March 1985. All the attendees were experts on the U.S. medical care system. The invitation list bore two stipulations from Professor Ginsberg: (1) that all be under 40 years old and (2) have potential to become health policy leaders. Far too complex to summarize, this precis by the author provides a glimpse into the high quality of the thinking from such an audience. For all their acumen, however, the attendees held widely divergent views about the size and shape of things to come. (Iglehart, J.K., *Health Affairs* 4(3):120-127, 1985.)☐

New Red Menace on Campus

In this survey of reported measles cases during the first half of 1985, it was found that 18.5 percent (334) occurred on 25 college campuses in 14 states and the District of Columbia. This proportion of measles cases on campuses was 6 times greater than in 1984, and approached the all-time high of 19.8 percent reached in 1983. The reasons for the outbreaks vary from foreign travel by students to areas where measles are endemic, to schools unwilling to impose immunization requirements. Some schools are requiring students to show proof of immunization before entrance; e g., the University of Michigan has had such a rule since September 1985. *(Morbidity and Mortality Weekly Report* 34(29): 445-449, 1985.)☐

Is It All Simply Pap?

Pap smears have been highly touted for years as an effective and efficient means to detect cervical cancer before it has spread. Now comes an editorial review in a prestigious British medical journal royally challenging those assumptions. After an analysis of recent experience in England and Wales with Pap smear use and the trends of cervical cancer survival, a new conclusion was reached: 40,000 smears and 200 excision biopsies (which normally follow highly suspicious smears) were required to save just one life. The editors note that this was "a grievously poor cost/benefit ratio." In that country, where care is rationed, it may be that use of the Pap smear will diminish. If the reviewer is correct, health in the United Kingdom may not suffer from that decision. (Editorial, *The Lancét* 1:363-4, 1985.)☐

Demographics of Physician Medicare/Medicaid Fraud

Here is a seldom-discussed social problem: fraud by physicians involving Medicare and Medicaid. In this report were 147 cases of physicians who submitted fraudulent charges from 1977 through 1982. California and New York had the most cases (41 and 25, respectively). Of the total, 36 percent were foreign medical school graduates. Meharry Medical College, Tenn. had the most (6); University of California, Irvine (5); University of Loma Linda, Cal. (4); University of Louisville, Ky. (3). Family/general practitioners (27.2 percent), psychiatrists (18.4 percent), and surgeons (10.9 percent) were the most prevalent offenders. Substantial resources are spent each year finding the guilty, which might be better spent expanding access to medical care. (Pontell, H.N., *et al*, *Medical Care* 23(8):1028-31, 1985.)☐

Go in Peace?

Since Peace Corps Volunteers (PCVs) are mostly young men and women, their causes of death abroad should reasonably be expected to be similar to their age mates at home. That assumption was affirmed by this study of the causes of death of 185 PCVs from 1962 through 1983. Unintentional injury was responsible for 70 percent of all deaths during this period. Vehicular crash injury was the leading cause. Suicide accounted for 5 percent (1962-83), but may be on the rise: from 1981 to 1983 the percentage of deaths attributed to suicide had risen to 13. It appears that PCVs need a better program of injury control and depression surveillance. (Hargarten, S.W., and Baker, S.P., *JAMA* 254(10):1326-1329, 1985.)☐

Grim Portrait of Postwar World

Virtually all health risks pale before the pictures that are emerging from the computerized studies of the world after a nuclear war. While much attention has focused on the "nuclear winter" issue, this new report, based on a study by the Scientific Committee on Problems of the Environment, finds that reduced global temperatures may be the least of mankind's problems. Mass starvation may be the most severe problem because of the disruption of agricultural productivity. This could become the primary cause of death after such a war. A grim portrait indeed for the inhabitants of the big blue marble. (Smith, R.J., *Science* 229:1245-46; see also, Malone, R.C., *et al*, *ibid* 230:317-19, 1985 for related article.)☐

What Protects Best From Stress?

By what means does contact with others protect individuals from stress? The literature in recent years has made the association quite clear. These authors focus their attention on two conjectures: Does the protection arise from social support by friends and family, or is that support more like a "buffer" from the harsher world? The authors, in a careful analysis of the literature, find that both social mechanisms play an important part in maintenance of healthy functioning of persons. The implications of their findings are as broad as the range of concern for mental health in humans. (Cohen, S., and Willis, T.A., *Psychological Bulletin* 98(2):310-357, 1985.)☐

Suicide: An Update

Sudden death is almost always associated with a sense of shock and grief among family and friends. However, the impact of suicide is worse because it also raises questions like "what if?"

The burden of suicide on United States society has remained numerically steady in the past three years. During 1985 an estimated 28,500 persons—predominately men—took their own lives. By comparison, in 1984 the provisional count of such deaths was 29,000 and the official total in 1983 was 28,295.

Suicide is the eighth leading cause of death in the United States and accounts for almost two percent of all deaths each year.

Suicide is the eighth leading cause of death in the United States and accounts for almost two percent of all deaths.

Although the total number of suicide deaths is relatively small compared, for example, to the one million from the major cardiovascular diseases and the half million deaths from cancer, their apparent preventability and emotional consequences make them seem a heavier problem for society. People who commit suicide often exhibit danger signals that express their intentions. An increased public awareness of suicidal symptoms, such as sudden mood changes, giving away prize possessions, or expressing self-destructive thoughts, may help potential victims receive needed mental health services.

Emphasis on Causation

Throughout history, scholars have puzzled over the "whys" behind suicides. Louis I. Dublin, a Metropolitan Life epidemiologist and statistician, was one of the first to call attention to the seriousness of the public health challenge that suicide represents.[1] By 1972 over 7,000 books and articles had been written on it as a public health problem.[2] After World War II, publications (which benefited from the increased knowledge gained through psychological research), switched emphasis from descriptions of the suicide problem to focus more on its causation.[3] Researchers began to ask why, under seemingly similar circumstances, some people killed themselves while others did not. Presently, scholars at the Yale School of Medicine, Depression Research Unit, after analyzing familial studies, have found, for instance, that depression in an adult increased the risk of depression in other family members.[4,5] Most current efforts by the researchers are aimed at causes of the suicide problem, and ultimately keys to its prevention.

Coinciding with the recent relatively stable death count from suicide, age-adjusted mortality rates have not exhibited any significant variation. In 1984 the provisional age-adjusted death rate was 11.6 per 100,000 population, similar to the 11.4 in 1983—and comparable to 1980. In 1950 the age-adjusted death rate was 11.0 per 100,000. It was 10.6 per 100,000 in 1960 and rose to 11.8 in 1970.

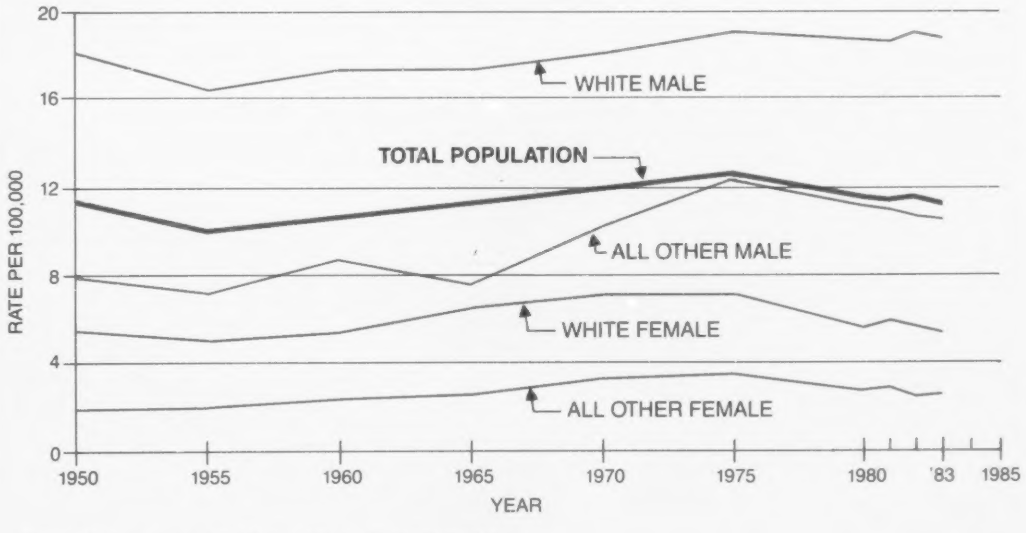
Contrasting Trends by Race and Sex

Compared with the overall picture of relatively steady mortality rates, analysis of suicide data by race and sex reveals contrasting trends. Among men, the age-adjusted death rate for whites fell slightly after 1950, then rose and remained around 17 per 100,000 between the mid-1950s and 1960s. It increased to 19 per 100,000 by the mid-1970s and then remained at this level. A similar pattern was exhibited for nonwhite men before 1965, after which a significant rise in the death rate occurred. In 1970 the ratio of white to nonwhite age-adjusted death rates decreased to 1.8 to 1; before then, white men's rates exceeded that of nonwhite men by twofold or more.

In the past decade, among men, nonwhites had more favorable mortality experience. The death rate from suicide for nonwhite men peaked at 12.3 per 100,000 in 1975 and declined steadily thereafter. Among white men, the age-adjusted death rate had also risen to a post-1950 high of 19.2 per 100,000 in 1975 and then receded, only to gradually increase again, reaching 19.4 per 100,000 in 1982 and 19.3 per 100,000 in 1983.

The early 1970s were also a period of higher suicide mortality among women. The death rate for white women rose to 7.2 per 100,000 in 1970 before gradually declining to 5.6 per 100,000 in 1983 (almost the same rate as in 1950). The highest mortality rate for nonwhite women was recorded in 1975—namely, 3.5 per 100,000. Currently the rate is 2.6 per 100,000, roughly the same as in 1965. Figure A shows the trend in mortality rates by race and sex in the period under review.

Figure A–Trend in Age-Adjusted Suicide Rates, by Race and Sex United States, 1950-83



Source: Various reports of the National Center for Health Statistics.

Why Women Succeed Less Often

It has long been pondered why women *attempt* suicide more frequently than men, but succeed less often. Between 1950 and 1983 over three times as many men died at their own hands than did women. The higher death toll among men reflected the method chosen to end life. Two-thirds of men committing suicide selected firearms, while the proportion among women was two-fifths. Hanging was the second leading cause of suicide deaths among men (15 percent) while over one-fourth (26 percent) of the women favored poison.

Between 1950 and 1983 over three times as many men died at their own hands than did women.

Historically, suicide was a significant phenomenon only among white men—especially those aged 45 and over. But, since 1950 the death rate among men at these ages has declined. Regrettably this change was offset by a concomitant rise among men aged 15-44.

Fatalities Between Ages 15-44

Examination of trend data since 1950 reveals that almost two-thirds of the deaths from suicide occurred among persons 45 and over. More than a third of those fatalities were between the ages 15-44; there were fewer than 40 deaths at ages under 15. By 1980, the proportion of suicide deaths at ages 45 and over had sharply declined to around two-fifths, while the percentage of fatalities at ages 15-44 rose to roughly three-fifths. During this period the number of children (that is, under age 15) who took their own lives nearly quadrupled to 142. Currently, the mortality toll among youngsters has risen to approximately 300—an alarming increase with significant future import.

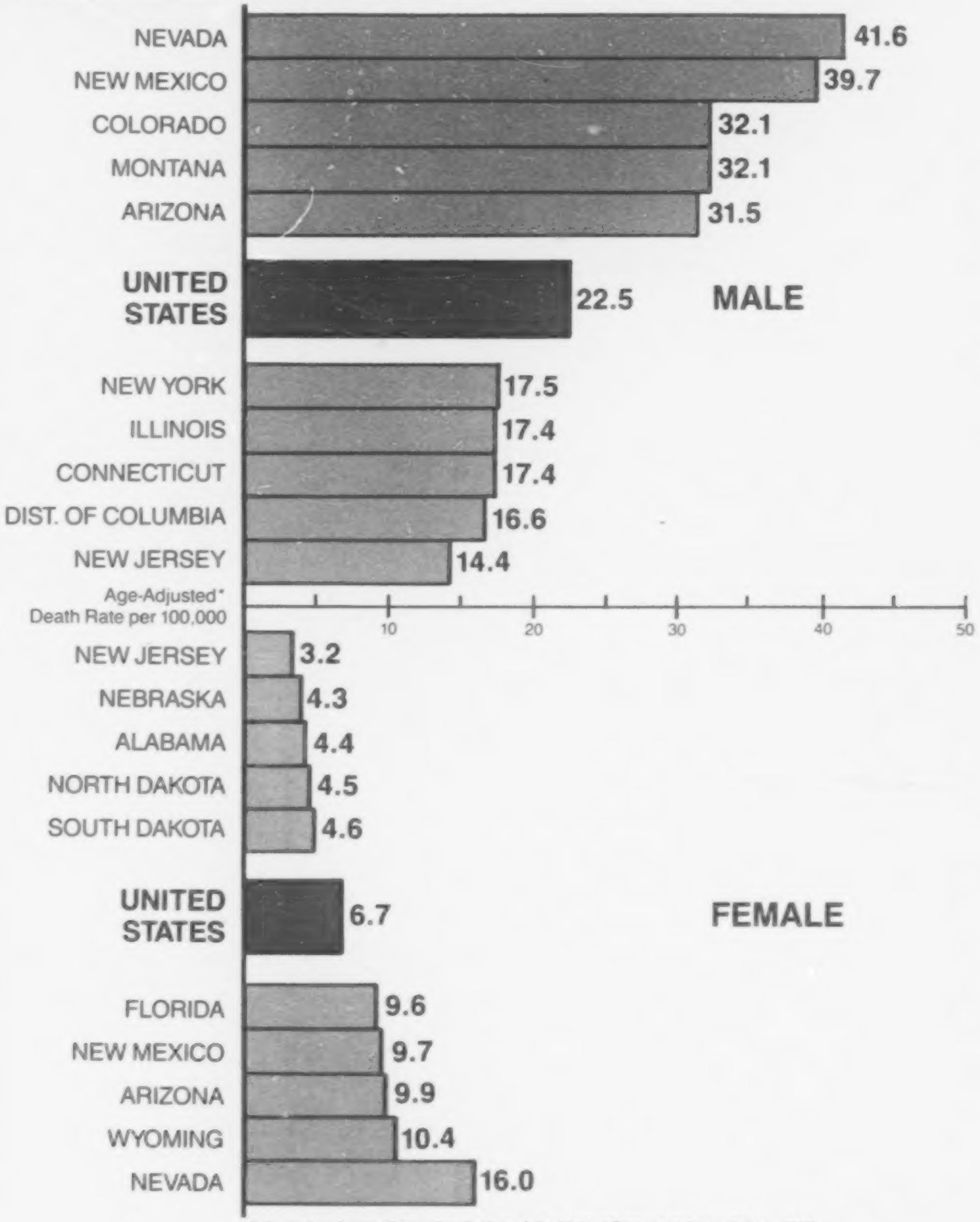
Trend data since 1950 reveal that almost two-thirds of suicide deaths occurred among persons 45 and over.

Notwithstanding the disturbing trend among children, most of the deaths from suicide in the United States occur in the three age brackets comprising the 15-44 age group. Nationally, the proportion of deaths during 1983 in each of these age groupings was fairly similar—namely 17.1 percent at ages 15-24; 22.4 percent at ages 25-34; and 15.2 percent at ages 35-44—amounting to almost 55 percent of all suicide deaths.

Geographic Variations for Men

There are marked geographic variations in the suicide death toll among persons aged 15-44. The age-adjusted death rate for men in the United States during the three-year period 1979-1981 was 22.5 per 100,000. The suicide mortality rate in the Middle Atlantic division of the country was 18.4 per 100,000, while in the Mountain division the reported rate was 45 percent larger than the national average, namely 32.7 per 100,000. The current relative ranking of these geographic divisions is unchanged from the positions occupied during 1959-61 and 1969-71 (see Table 1 on page 20).

Figure B—States With Highest and Lowest Mortality From Suicide Population Aged 15–44, by Sex United States, 1979–81



*Adjusted on basis of age distribution of the United States total population, 1940.

Table 1—Age-Adjusted Mortality Rate From Suicide, Males Aged 15-44 United States, 1959-61 to 1979-81

	Death Rate per 100,000		
Geographic Division	1959-61	1969-71	1979-81
UNITED STATES	13.9	17.8	22.5
New England	12.7	16.3	20.0
Middle Atlantic	10.6	13.1	18.4
East North Central	12.6	16.7	21.3
West South Central	13.2	16.3	21.1
South Atlantic	16.4	18.2	23.0
East South Central	13.5	17.5	20.9
West North Central	12.6	16.8	24.1
Mountain	21.7	27.4	32.7
Pacific	18.2	24.8	25.1

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, from various reports of the National Center for Health Statistics and Bureau of the Census.

Among individual states suicide mortality rates varied as much as 300 percent.

Among individual states mortality rates varied as much as 300 percent. During 1979-81 the death rate from suicide for men aged 15-44 was only 14.4 per 100,000 in New Jersey but was 41.6 per 100,000 in Nevada. An extremely high rate was also reported in New Mexico—39.7 per 100,000.

Warning Signs in Teenage Suicides Can Be Detected

A Word From the American Academy of Pediatrics

Adolescent suicide has become a national concern, capturing the attention of television fiction as well as hard news reports. The media recently have reported the startling news that teen suicides sometimes occur in clusters—one suicide in a community often can stimulate a string of suicides among young people attending the same high school or group of schools.

Suicidal tendencies are detectable. Studies show that teenagers who consider killing themselves give warning signs before their suicide attempts. The warning signs include many standard indications of depression:

- Noticeable change in eating and sleeping habits
- Withdrawal from friends and family
- Persistent boredom
- Decline in quality of school work
- Violent or rebellious behavior
- Running away
- Drug and alcohol abuse
- Unusual neglect of personal appearance
- Difficulty concentrating
- Radical personality change
- Psychosomatic complaints

A teenager who is planning to commit suicide might give verbal hints such as "I won't be a problem for you much longer," "Nothing matters," or "It's no use." The adolescent also might make "final arrangements" such as giving away favorite possessions or while death rates less than half as large were experienced in Iowa, Nebraska, South Carolina, Mississippi, Massachusetts, New York, Connecticut, Illinois and the District of Columbia.

During 1979-81 Nevada and New Mexico reported the highest death rates from suicide for men aged 15-24 and 25-34; New Jersey the lowest.

Nevada and New Mexico were in the unenviable position of reporting the highest death rates from suicide for men aged 15-24 and 25-34. At ages 35-44, the death rate was highest in Wyoming, closely followed by that in Nevada. On the other hand, the suicide death rate was consistently lowest in New Jersey. Another constant was the low death rate in each of the three age groups in the Middle Atlantic division and the high rates in the Mountain states.

Nationally, when examined by gender, suicide is mainly a problem among men—their death rates are 2½ to three times greater for ages 15-44. Some notable excep-

throwing away personal mementos.

Teenagers who commit suicide often feel that nobody needs them—that nobody cares. Many adolescent suicides occur shortly after a loss of some kind—the death of a friend, the breakup with a boyfriend or girlfriend, or parents' divorce.

Some estimates hold that adolescent suicide is the third leading cause of death among teenagers. Parents, brothers or sisters, friends and teachers who notice any signs that indicate the possibility of suicide should discuss them with the child or teenager. Don't be afraid that talking about suicide will cause the youngster to do it. Frank discussions about his or her feelings can have the opposite effect. Professional help should be sought if there is reason for serious concern. Sources of help include pediatricians, child psychiatrists, "hot line" services, local medical societies, and other physicians. Many medical organizations recommend that parents join children in viewing television broadcasts about suicide to discuss their feelings afterward. Most important, if your child ever talks about committing suicide, don't dismiss the youngster's comments. Deal with his or her concerns in an open manner. Take action promptly. □

Reprinted from *Young Health*, American Academy of Pediatrics, Winter 1985.

Nationally, when examined by gender, suicide is mainly a problem among men.

tions to the general sex ratio occur, though. Take Nevada, for instance, where the age-adjusted death rate from suicide for women aged 15-44 (16 per 100,000) was greater than the rate for men in New Jersey.

Geographic Variations for Women

Geographic variations for women occur, too. Wyoming reported the second highest death rate among women—10.4 per 100,000. Both Nevada and Wyoming are in the Mountain division of the country and, as a result, the overall death rate for the area (9.1 per 100,000) was the highest for women in the country. In the Pacific division women also experienced a high suicide mortality rate—due mainly to the 9.1 per 100,000 death rate in California. On the more favorable side, New Jersey reported the lowest mortality rate for women from suicide—3.2 per 100,000. No other state reported a women's death rate below 4 per 100,000, although 9 states experienced rates between 4 and 5 per 100,000. For each of the three age groups analyzed in this report, the death rates were lowest in New Jersey and highest in Nevada. Figure B on page 19 presents the five states with the highest and lowest death rates from suicide for men and women separately. Geographic details of death rates for each of the three age groups can be seen in Table 2.

True Magnitude of the Problem

Almost 100,000 people were reported to have committed suicide during the past three years according to published mortality statistics. Unfortunately, this figure is widely believed by experts to be significantly understated, in part because of the stigma that society still attaches to taking one's own life.[6] As a result, the actual cause of death may be misreported on death certificates. In addition, fatalities attributed to accidents could, after investigation, be reallocated to suicide in many cases. Too, suicide statistics do not include lifestyles or chronically inflicted biological insults such as alcohol or drug abuse. The designations as "suicide" would necessitate estimates of intent, or levels of understanding by attending physicians that would be difficult or impossible to validate in most cases.

The true magnitude of the problem of "intentional" suicides is underscored by studies that estimate unsuccessful attempts to be 10 times greater than reported suicides.[7] In an effort to reduce the frequency of overt suicide, prevention centers and educational programs have been set up throughout the country. Additionally, research into the association of depressed parents and onset of depression or anxiety in offspring may lead to interventions which may prevent future suicides. ☐

References

[1] Dublin, L.I., Bunzel, B. *To Be or Not To Be*. New York: Smith and Haas, 1933.

[2] Choron, J., *Suicide*. New York, Charles Scribner's Sons, 1972, p. 6.

[3] Farberow, N.L., and Shneidman, E.S., *The Cry for Help*. New York, McGraw-Hill, 1961, bibliography.

[4] Weissman, M.M., et al. "Depression and anxiety disorders in parents and children." *Arch Gen Psychiatry*, 41:845-852, 1984.

[5] Weissman, M.M., et al. "Onset of major depression in early adulthood." *Arch Gen Psychiatry*, 41:1136-1143, 1984.

[6] Dublin, L.I., *Suicide: A Sociological and Statistical Study*. New York: The Ronald Press, 1963, p. 3.

[7] Choron, J., op. cit., p. 49.

Table 2—Mortality From Suicide, Population Aged 15-44, by Sex United States, 1979-81

	Death Rate per 100,000							
	Male				Female			
Area	15-44*	15-24	25-34	35-44	15-44*	15-24	25-34	35-44
United States	22.5	19.9	25.4	22.5	6.7	4.5	7.3	8.9
New England	20.0	17.8	23.2	19.0	5.6	3.2	6.1	8.1
Maine	24.9	21.2	28.9	25.1	8.0	†	7.8	14.1
New Hampshire	23.9	23.4	24.8	23.5	7.0	†	†	12.6
Vermont	28.9	29.6	30.1	26.6	9.2	†	†	†
Massachusetts	18.3	15.8	22.2	17.1	4.9	2.8	6.0	6.4
Rhode Island	23.6	22.5	27.2	20.8	6.5	†	†	†
Connecticut	17.4	14.9	20.2	17.3	4.7	3.6	4.7	6.1
Middle Atlantic	18.4	16.5	21.2	17.5	4.9	3.3	5.3	6.6
New York	17.5	14.9	20.7	17.0	5.2	3.9	5.6	6.4
New Jersey	14.4	14.8	14.4	13.9	3.2	1.6	3.8	4.5
Pennsylvania	22.3	19.8	26.2	20.9	5.7	3.6	5.8	8.3
East North Central	21.3	19.7	23.9	20.4	6.3	4.1	6.6	8.7
Ohio	23.0	20.5	25.5	23.4	7.1	3.7	8.2	10.4
Indiana	21.5	18.3	24.1	22.5	4.8	3.0	5.2	6.6
Illinois	17.4	16.8	20.1	15.1	5.3	4.4	5.1	6.6
Michigan	22.8	21.2	26.0	21.2	7.0	4.3	7.5	10.0
Wisconsin	24.2	23.8	25.7	23.0	6.6	5.0	6.4	9.5
West North Central	21.1	20.0	23.5	19.7	5.8	3.8	6.2	7.9
Minnesota	20.9	21.6	22.5	18.0	6.2	4.2	6.5	8.4
Iowa	19.8	16.7	22.5	20.7	4.8	2.4	5.7	6.7
Missouri	21.3	19.1	24.6	20.2	6.6	4.4	6.4	9.7
North Dakota	22.0	26.2	20.1	†	4.5	†	†	†
South Dakota	25.3	25.8	22.1	28.5	4.6	†	†	†
Nebraska	19.2	18.6	20.0	19.2	4.3	†	†	†
Kansas	22.8	20.7	28.2	19.1	6.0	3.9	8.1	6.3
South Atlantic	23.0	19.3	25.5	24.9	7.1	5.0	7.7	9.2
Delaware	23.8	27.6	19.4	24.1	7.0	†	†	†
Maryland	20.5	19.5	23.8	18.0	5.3	3.5	5.4	7.4
Dist. of Columbia	16.6	13.8	23.6	†	†	†	†	†
Virginia	24.6	20.7	27.0	26.8	6.7	4.2	7.0	9.6
West Virginia	22.2	16.9	23.4	27.6	6.0	4.4	6.5	7.6
North Carolina	20.2	16.6	21.0	23.9	6.8	4.4	7.0	9.6
South Carolina	19.1	16.0	21.6	20.4	5.7	3.7	7.9	5.6
Georgia	22.2	17.0	24.9	25.7	7.2	5.7	7.1	9.2
Florida	27.7	23.2	31.4	29.4	9.6	7.2	10.8	11.2
East South Central	20.9	16.6	22.5	24.8	6.2	4.1	6.8	8.4
Kentucky	21.8	17.6	23.9	24.7	7.1	4.1	8.4	9.5
Tennessee	22.5	17.5	24.0	27.3	7.3	4.6	8.7	9.2
Alabama	20.0	15.1	21.2	25.1	4.4	3.7	3.7	6.0
Mississippi	18.1	16.0	19.6	19.2	5.9	3.9	5.8	8.6
West South Central	24.1	22.0	27.2	23.2	7.4	5.2	8.4	9.1
Arkansas	20.3	18.0	20.9	22.7	5.6	3.6	7.6	6.0
Louisiana	23.4	21.6	26.5	22.3	7.6	6.1	8.8	9.5
Oklahoma	27.2	24.8	30.7	26.3	8.4	7.2	9.3	8.9
Texas	24.1	22.1	27.5	22.9	7.4	5.1	8.3	9.4
Mountain	32.7	30.7	35.5	31.9	9.1	6.1	9.4	12.8
Montana	32.1	31.2	34.5	30.6	6.4	†	†	†
Idaho	27.3	29.7	29.6	21.4	4.9	†	†	†
Wyoming	31.1	28.7	28.2	37.5	10.4	†	†	†
Colorado	32.1	27.2	35.4	34.7	9.0	6.0	8.7	13.1
New Mexico	39.7	43.5	39.7	34.7	9.7	6.0	8.9	15.4
Arizona	31.5	30.2	36.0	27.9	9.9	6.6	11.2	12.8
Utah	28.8	22.5	31.3	34.2	7.5	6.2	†	11.6
Nevada	41.6	41.2	46.6	36.2	16.0	11.5	20.1	17.0
Pacific	25.1	21.1	29.0	25.7	8.8	5.9	9.6	11.5
Washington	25.2	23.2	28.4	24.1	8.4	5.4	9.7	10.7
Oregon	26.6	23.8	29.1	27.4	7.8	6.3	7.8	9.7
California	25.0	20.3	29.3	26.1	9.1	5.9	9.9	12.2
Alaska	27.8	31.8	26.9	23.7	9.2	†	†	†
Hawaii	21.0	21.6	23.2	17.7	5.7	†	†	†

*Adjusted on basis of age distribution of the U.S. total population, 1940.

†Fewer than 20 deaths; rate not computed.

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on deaths from the Division of Vital Statistics, National Center for Health Statistics, and 1980 Census population from the Bureau of the Census.

Healthy Me
1985 School Health
Education Survey

Metropolitan Life School Health Education Survey

How Healthy is the Curriculum?

The Metropolitan Life Foundation funded a survey of comprehensive school health education programs in U.S. public schools during the 1984-85 school year. The survey was designed to learn the nature and the type of education our children were receiving about one of the most important aspects of their current and future lives—their health. Survey results represented the health education experiences of 7.6 million public school children in all 50 states.

While all agree that children's education about health and health-related topics is important, the survey found that only one-third of the nation's children received comprehensive health education during the last school year. The survey results also indicated:

- in lower grades (1-6) 81 percent of health education programs are taught by regular classroom teachers who have no special training in health education.
- in junior and senior high school, only about one-half of the health education classes are taught by certified health educators.
- in lower grades, personal health and hygiene predominate as health topics, followed by accident prevention for kindergarteners and nutrition for 1-6 graders. In the upper grades substance abuse and family life topics receive emphasis in the health education curriculum.
- though most school superintendents acknowledged the importance of updating the health education skills of their teachers, regular classroom teachers—those professionals most often involved in health instruction—were found to be the least likely to receive in-service training.
- family life is ranked No. 6 out of 12 topic areas in amount of perceived importance or relevance to the needs of the children in the school district; this despite the alarming numbers of teenage births in this country reported in the Jan-Mar *Statistical Bulletin*.
- emotional health and understanding stress were ranked among the top four health education concerns of the school districts surveyed—an obvious reflection of the growing awareness and fear of the issue of teenage suicide. ☐

For a copy of this survey, write:

Health and Safety Education Division, Dept.
SB, Metropolitan Life, One Madison Ave.
New York, N.Y. 10010

Costs of Cholecystectomy: Variation by Region

Close to half a million cholecystectomies are performed annually in the United States, making the removal of the gallbladder the "most common interabdominal procedure in general surgery."[1] Between 1972 and 1983 the number of these surgeries rose 22 percent in the United States.[2] A cholecystectomy is more frequently performed on women than men, and the average age of most patients is in the mid-forties. This surgical procedure typically results in more than a week of hospitalization.

Considerable geographic variation in cholecystectomy rates persists within Canada and the United States as well as between these countries and England, France and Scotland. The surgical rates differ markedly between North America and England despite similar prevalence rates of gallstones in these countries.[3] Such variations suggest that factors other than morbidity account for the differences in cholecystectomy rates. There seems to be a lack of consensus about appropriate treatment for gallstones, the indications for surgery and/or the natural history of this disease.[4-6] The reasons that cholecystectomies are performed at varying rates in various locations continue to be studied and remain to be explained.

> The surgical rates differ markedly between North America and England despite similar rates of gallstones in these countries.

The Metropolitan Study

Not only do cholecystectomy rates differ by geographic area, but the average charges for this procedure also vary. An analysis of 7,545 cholecystectomies performed between January 1, 1982, and June 30, 1983, on employees of companies insured under group health contracts by Metropolitan Life Insurance Company revealed major regional variation in charges for this operation. The average total medical care charges for a cholecystectomy during this period was $5,450, with as much as a 234 percent variation in average costs by state. The Metropolitan Life study reports charges for all forms of cholecystectomy—those with and those without common bile duct exploration. Presentation of data will be confined to those 28 states in which at least 25 simple cholecystectomies were performed on males; these data represent 90 percent of the reported cases in the Metropolitan Life file.

> The average total medical care charges during January 1982-June 1983 was $5,450, with as much as a 234 percent variation in average costs by state.

The majority of cholecystectomies are performed without exploring the common bile duct for gallstones. Of the total cases reviewed, only 22 percent included the more complicated procedure. Seventy percent of operations with bile duct exploration were performed on women whose median age was approximately 42. Men having this surgery averaged 10 years older. These sex and age differentials were similar for the patients who underwent a cholecystectomy without common bile duct exploration. The geographic distribution of these two forms of surgery was almost identical for all nine divisions of the country (see Table 1). The average total cost was approximately 16 percent higher for a cholecystectomy with common bile duct exploration than one without, amounting to a dollar difference of $820. An extra day of hospitalization was observed for the more expensive procedure and this resulted in a difference of $190 in average charges for room and board. As might be expected, the largest difference in costs for these two types of cholecystectomy was apparent in the average charges for ancillary services (i.e., laboratory, radiology, operating and recovery room, etc.). While these charges accounted for similar proportions of the hospital bill (65 percent with bile duct exploration and 63 percent without), the ancillary charges for the former procedure were 20 percent higher, $2,970 versus $2,470, respectively.

A 35 percent difference existed for both procedures between the highest average total charge reported for the Pacific region and the lowest charge reported for the East South Central region. The differences in the charges between these two kinds of surgery were consistent by sex, region and individual states. Total and individual costs were more pronounced and more variable between geographic divisions and states than between types of surgery. Thus, the data were combined, weighted averages were computed and the results analyzed for *all* cholecystectomies.

As shown in Table 1, more than half of all cholecystectomies (54 percent) were performed in three of the nine geographic divisions of the country—East North Central, South Atlantic and West South Central. The New England division reported the lowest proportion of these surgeries (5 percent). The average total charges for this surgery varied considerably by geographic division. The highest average total cost was reported in the Pacific division—$6,740—and this cost was 24 percent above the national average. The lowest total charges were reported in the East South Central area, where the costs were 8 percent below the national average and 26 percent below that for the Pacific region. As seen in Figure A, two-thirds of the divisions recorded average charges below the average for the country.

Cost Variation by State

Substantial variation in average total charges for a cholecystectomy was evident between states. The highest total charge was reported in Nevada, $8,930, and the lowest was in Delaware, $3,820 (data not shown), for a difference of 234 percent. Of the states in this analysis, however, Florida (Metropolitan Life activity in group insurance is principally in the Miami area) led all in high charges, reporting total costs of

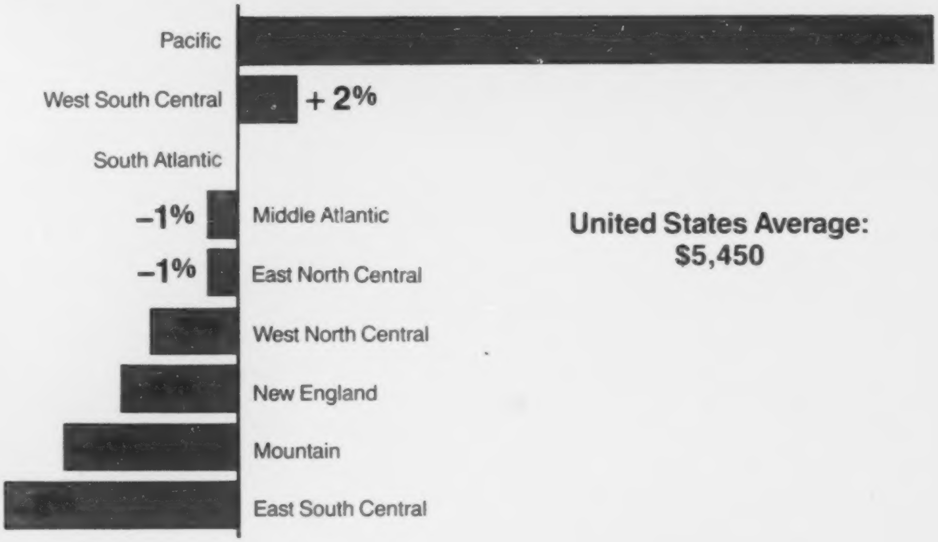
$7,460—37 percent above the national average. This high was followed by the charges in California, where the costs were 30 percent above the nation (Figure A). Illinois was the only other state in which the charges were at least 20 percent above the average in the country. The lowest total charges were recorded in North Carolina, with costs averaging $4,010—26 percent below the national total. It is interesting that because of the effect of charges in the Miami area, both the highest and lowest charges were reported for states within the South Atlantic division. Six other states, i.e., Indiana, Wisconsin, Iowa, Minnesota, Kentucky and Utah, reported average cholecystectomy costs 10 percent or more below the U.S. total.

Table 1—Summary of Selected Characteristics of Cholecystectomy Patients With and Without Common Bile Duct Exploration

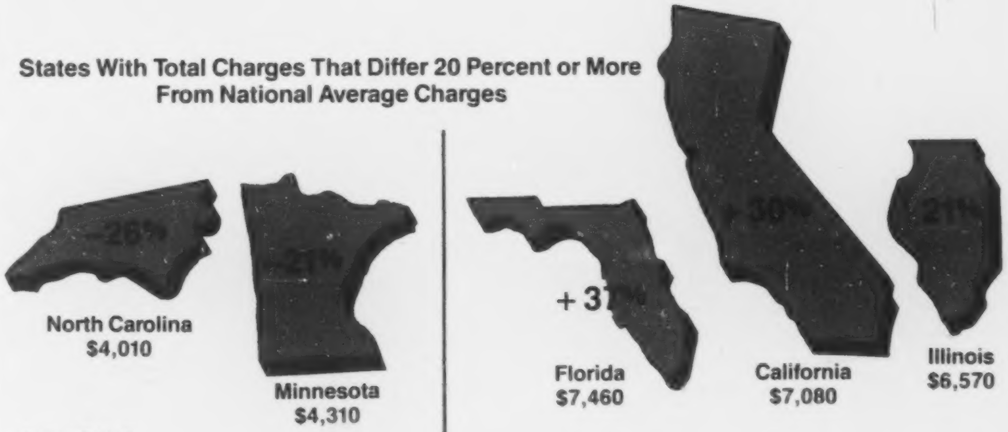
	Distribution of Cases		
	Cholecystectomy Without Common Bile Duct Exploration	**Cholecystectomy With Common Bile Duct Exploration**	**All Cholecys- tectomies**
New England	5%	4%	5%
Middle Atlantic	13	9	12
East North Central	23	27	24
West North Central	7	8	7
South Atlantic	16	15	16
East South Central	9	9	9
West South Central	14	17	14
Mountain	7	6	7
Pacific	6	5	6
Total Cases	(5,877)	(1,668)	(7,545)
Total Charges	$5,260	$6,080	$5,450
Highest Regional Total Charges	Pacific $6,570	Pacific $7,500	Pacific $6,740
Lowest Regional Total Charges	East South Central $4,860	East South Central $5,570	East South Central $5,020
Hospital Charges as Proportion of Total	74%	76%	75%
Ancillary Charges as Proportion of Total Hosp	63%	65%	63%
Length of Stay	8.8	9.8	9.0

Source: Claims data from Metropolitan Life Insurance Company, merged and edited by Corporate Health Strategies, Inc.; analysis by Health and Safety Division personnel.

Figure A—Percent Difference in Average Total Costs of a Cholecystectomy by Geographic Division January 1, 1982–June 30, 1983

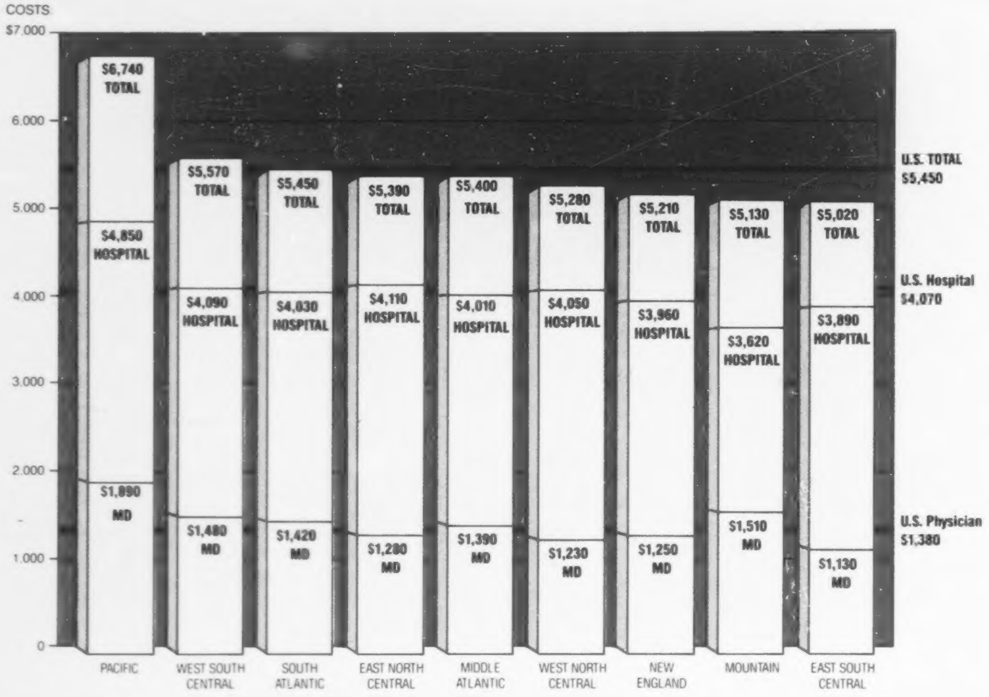


States With Total Charges That Differ 20 Percent or More From National Average Charges


–26%
North Carolina
$4,010
–21%
Minnesota
$4,310
+ 37%
Florida
$7,460
+ 30%
California
$7,080
21%
Illinois
$6,570

Source: Table 2

Figure B—Geographic Distribution of Total, Hospital and Physician Charges for a Cholecystectomy January 1, 1982–June 30, 1983



Source: Table 2.

Physician and Hospital Charges

On average, three-fourths of the cost of a cholecystectomy was attributed to hospital charges that include costs for room and board and ancillary services. By state, these proportions ranged from 79 percent in Michigan and Tennessee to 69 percent in Maryland and Utah. Figure B displays the total cholecystectomy costs for each region with the proportionate share that physician and hospital charges contribute to this total.

The total hospital bill differed by as much as 85 percent between the high reported for Florida and the low for North Carolina. The North Carolina hospital bill was low primarily because the room and board charges were so low, i.e., $960, or 36 percent below the national average. Other states in which the hospital charges were 10

Table 2—Regional Variation in Charges for Cholecystectomy* January 1, 1982–June 30, 1983

	Average Costs ($)						Percentage	
	Total Hospital & Physician	Hospital Charge			Physician Charge	Average Length of Stay	Hospital of Total	Ancillary of Hospital
Geographic Area		Total	Room & Board	Ancillary				
United States	5,450	4,070	1,490	2,580	1,380	9.02	75	63
New England	5,210	3,960	1,680	2,280	1,250	9.20	76	58
Connecticut	5,040	3,750	1,620	2,130	1,290	9.48	74	57
Massachusetts	5,600	4,370	1,790	2,580	1,230	9.18	78	59
Middle Atlantic	5,400	4,010	1,770	2,240	1,390	9.30	74	56
New Jersey	5,250	3,760	1,570	2,190	1,490	9.30	72	58
New York	5,830	4,140	2,040	2,100	1,690	9.78	71	51
Pennsylvania	5,180	4,020	1,680	2,340	1,160	9.01	78	58
East North Central	5,390	4,110	1,660	2,450	1,280	9.43	76	60
Illinois	6,570	5,040	2,000	3,040	1,530	9.84	77	60
Indiana	4,820	3,580	1,490	2,090	1,240	9.75	74	58
Michigan	5,000	3,960	1,580	2,380	1,040	8.10	79	60
Ohio	5,070	3,910	1,620	2,290	1,160	9.43	77	59
Wisconsin	4,880	3,630	1,370	2,260	1,250	8.85	74	62
West North Central	5,280	4,050	1,440	2,610	1,230	9.25	77	64
Iowa	4,660	3,560	1,440	2,120	1,100	9.42	76	60
Minnesota	4,310	3,140	1,140	2,000	1,170	7.59	73	64
Missouri	5,810	4,520	1,570	2,950	1,290	9.80	78	65
South Atlantic	5,450	4,030	1,280	2,750	1,420	8.76	74	68
Florida	7,460	5,450	1,460	3,990	2,010	9.42	73	73
Georgia	4,950	3,680	1,170	2,510	1,270	8.73	74	68
Maryland	4,940	3,410	1,440	1,970	1,530	9.05	69	58
North Carolina	4,010	2,950	960	1,990	1,060	7.35	74	67
Virginia	5,050	3,900	1,340	2,560	1,150	9.17	77	66
East South Central	5,020	3,890	1,220	2,670	1,130	9.58	77	69
Alabama	5,430	4,210	1,210	3,000	1,220	9.64	78	71
Kentucky	4,470	3,330	1,390	1,940	1,140	9.28	74	58
Tennessee	5,000	3,950	1,210	2,740	1,050	9.57	79	69
West South Central	5,570	4,090	1,260	2,830	1,480	9.13	73	69
Arkansas	5,440	4,180	1,300	2,880	1,260	9.90	77	69
Louisiana	5,390	4,050	1,100	2,950	1,340	8.42	75	73
Oklahoma	5,130	3,920	1,220	2,700	1,210	8.25	76	69
Texas	5,710	4,120	1,320	2,800	1,590	9.41	72	68
Mountain	5,130	3,620	1,300	2,320	1,510	7.63	71	64
Arizona	5,430	3,830	1,150	2,680	1,600	7.13	71	70
Utah	4,830	3,310	1,250	2,060	1,520	7.66	69	62
Pacific	6,740	4,850	1,780	3,070	1,890	7.62	72	63
California	7,080	5,090	1,830	3,260	1,990	7.68	72	64

*Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company.
Source: Claims data from Metropolitan Life Insurance Company, merged and edited by Corporate Health Strategies, Inc.; analysis by Health and Safety Education Division personnel.

percent or more above the national average included Illinois, Missouri (principally the St. Louis area) and California. In contrast to these high hospital charges are those reported in Minnesota, Maryland, Kentucky and Utah, where the costs were at least 15 percent below average.

Physician charges varied extensively by state also. Florida and California again reported the highest state total charges, $2,010 and $1,990, which were 46 and 44 percent above the national average, respectively. Michigan, Tennessee and North Carolina registered average physician charges between 23 and 25 percent below that for the nation.

In three geographic divisions, New England, Middle Atlantic and East North Central, ancillary services comprised a smaller proportion of the hospital bill than the national average. Within these divisions, New York reported an average ancillary charge of $2,100, which was just over half of the total hospital bill and 19 percent below the national average. The lowest ancillary services charges were reported in Kentucky, with costs 25 percent lower than the nation.

Stones in the gallbladder will develop in approximately 20 percent of all Americans over the age of 40.

Stones in the gallbladder will develop in approximately 20 percent of all Americans over the age of 40. The majority of these persons will remain asymptomatic throughout life. Thus, the presence of gallstones is not the only prerequisite for a cholecystectomy. Conservative treatments are available and new, less complicated surgeries and some noninvasive treatments are being developed and tested, all toward a goal of reducing the medical/surgical costs associated with one of the nation's top 10 surgical procedures.

Why do costs of a cholecystectomy vary between geographic divisions and states? The reasons for and the meaning of such differences are difficult to assess. However, insofar as differences in incidence and prevalence rates of the disease do not appear to be significant, variation is more likely to be explained by prevailing medical practices, socioeconomic characteristics of the population, a difference in the proportion of elective versus emergency surgery, and the uncertainty of the natural history of gallstones. Whatever the explanation, it seems possible that some unnecessary surgery is being performed and health care consumers, providers and insurers should be alerted to the availability of alternative treatment regimens and encouraged to seek a second surgical opinion. □

References

[1] Cageorge, S.M., Roos, L.L. Jr., Danzinger, R. "Gallbladder operations: A population-based analysis." *Medical Care* 19:510-525, 1981.

[2] Sloan, F.A., Perrin, J.M., Valvona, J. "The teaching hospital's growing surgical caseload." *JAMA* 254(3):376-382, 1985 and National Center for Health Statistics, Graves, E.J. "1983 summary: National hospital discharge survey." *Advance Data from Vital and Health Statistics*, No. 101, DHHS Pub. No. (PHS) 84-1250, Public Health Service, Hyattsville, Md., Sept. 28, 1984.

[3] Bateson, M.C. "Gallbladder disease and cholecystectomy rate are independently variable." *The Lancet* II:621-624, 1984.

[4] Gracie, W.A., Ransohoff, D.F. "The natural history of silent gallstones: The innocent gallstone is not a myth." *New England J of Med* 307:798-800, 1982.

[5] Vayda, E., Barnsley, J.M., Mindell, W.R., Cardillo, B. "Five-year study of surgical rates in Ontario's counties." *Can Med Assoc J* 131:111-115, 1984.

[6] Coulter, A., McPherson, K. "Socioeconomic variations in the use of common surgical operations." *British Medical Journal* 291:183-187, 1985.

[7] McPherson, K., Strong, P.M., Jones, L., Britton, B.J. "Do cholecystectomy rates correlate with geographic variations in prevalence of gallstones?" *Journal Epid. Comm. Health* 39:179-182, 1985.

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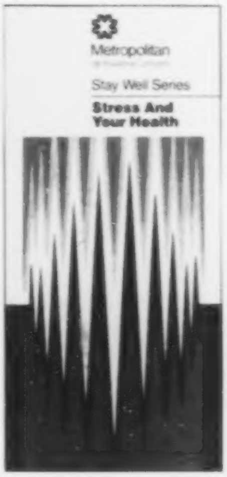
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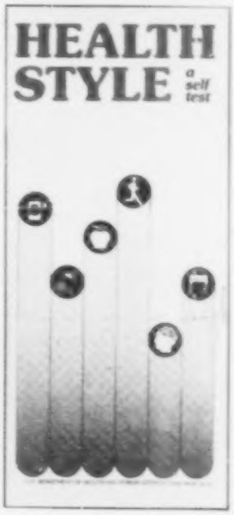
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Coming in Future Issues

- 1985 Life Expectancy of Men and Women
- Live Births by Age of Mother: Past and Present
- State Variations in Longevity
- Motor Vehicle Accidents: Variations by State and Sex

Erratum

Re: Variations in Mortality from Cancer
Statistical Bulletin, Vol. 67, pp. 22-27,
Jan-Mar 1986

Table 2—Mortality From Malignant Neoplasms Among Women, page 24: The correct death rate for women aged 45-54 should read 171.0

Historical Perspectives

40 YEARS AGO

IN THE **1946** STATISTICAL BULLETIN

Suicide rates increased after V-E Day, particularly among men. Part of this was attributed to the sharp decline in industrial activities and the subsequent reduction in employment. Some of the rise was probably caused by the difficulties of adjusting to civilian life. Economic and psychological factors have always had a profound effect on the suicide rate. Metropolitan statisticians pointed out that following World War I, the rate declined for two years, then increased sharply and continued upward until the early 1930s. (Currently the suicide rate for men is 19.2 per 100,000, for women it is 5.6—ed.) (Page 6, April) □

1946 marked the 25th anniversary of the discovery of insulin by Sir Frederick Banting and Dr. Charles H. Best in Toronto, Canada. Insulin has greatly enhanced the lives of diabetics and reduced mortality from diabetic comas, infection and gangrene. As a consequence, the number of diabetics in the population increased considerably, since treatment prolonged life without effecting a cure. Thanks to insulin and a better understanding of diabetes, the diabetic patient could anticipate a relatively healthy and active life. (Page 8, October) □

A brilliant victory had been scored over typhoid fever by medical science and public health experts. Between 1900 and 1944 the death rate for typhoid had declined by 99 percent from 30 per 100,000 to 0.4 per 100,000. Measures that contributed to this remarkable result were: installation of sewers, inoculations, and the filtration and chlorination of central water supplies. By 1944 typhoid fever had been completely eradicated in all areas of the country except the South and Southwest. (At present there are fewer than 5 deaths annually—ed.) (Page 9, June) □

The demographic picture of the U.S. population was changing. Persons 65 and over were becoming more numerous and certain health conditions peculiar to this group had to be addressed. A review of Metropolitan's companywide nursing service provided to policyholders from 1925 to 1945 verified this finding. In 1925, 50 percent of the cases were nursed for acute and communicable diseases common to early life and only 5 percent were for chronic diseases typical of old age. By 1945, a reversal occurred—the figures were 14 and 28 percent, respectively. Medical science and public health administrators had to adapt their services to combat cancer and cardiovascular-renal diseases, chief among the diseases causing invalidism and death among the aged. Their prevention and treatment would increase life expectancy as well as improve the productive capacity of the country. (Page 6, December) □

The intensified national campaign against venereal disease, particularly syphilis, had been very effective. This was verified by a study among Metropolitan Life policyholders for the period 1911 to 1945. Legislation requiring premarital blood tests in the majority of states and testing of expectant mothers had played a vital part in halting the transmission of the disease. Even wartime factors aided in the control, as a large number of cases were discovered through the Selective Service examination. Penicillin was an important factor in the attack on syphilis, but education played a vital role in eventually wiping it out. (Page 8, December) □

The United States was experiencing a period of vitality and population growth. There was a record high number of births and at the same time the total and infant mortality rates fell to new lows. The record number of babies resulted from the sharp increase in marriages that followed the demobilization of the armed forces after V-J Day in 1945. The national birth rate was about 24 per 1,000. (For several years, the U.S. birthrate has remained near 16 per 1,000 population—ed.) Infant death rates reached a record low of about 37 per 1,000 live births, while the death rate for the total population was about 10.2 per 1,000. As a result of high birth rates and low death rates the outlook for population growth was extremely bright. (Page 3, December) □

A study of intermarriage in New York State disclosed an increasing tendency for the foreign born to marry people born in the United States. With more economic and social contact, the traditional tendency to marry within one's own national group was disappearing. Of the countries studied for period 1928-41, women from England, Scotland and Wales showed the greatest tendency to marry men of other national groups. On the other hand, no progress in intermarriage was observed for brides and grooms born in Italy. The breaking down of racial barriers through intermarriage was viewed as a very positive step—especially in a world which had suffered so much from national rivalries and conflicts. (Page 4, May) □

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SB
STATISTICAL BULLETIN

Vol 67 No 3 Jul-Sep 1986

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11 **Recent Trends in Marriage.** Is the institution stable? Insights into the ups and downs of recent demographic data.

18 **Accident Mortality Among Men of Working Ages.** Significant implications for accident prevention in the working environment.

25 **Record Longevity Maintained.** Life expectancy in the United States hits a record plateau.

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From The Editor's Desk

The Bard rightly knew a clever theatrical ploy. He had MacDuff "untimely from his mother's womb ripped," and thus neatly sidestepped the witches' prophecy. Macbeth's fate was sealed with this neat turn by Shakespeare in "Macbeth." Today cesarean sections, as we now refer to them, are also causing consternation, but without such drastic implications. *SB* this issue reviews the recent regional trends in incidence and medical care statistics in the rising proportion of total deliveries by cesarean. As the article and the Commentary by Dr. Paul Placek discuss, the subject has many facets, each with public health significance.

Marriages Still Much in Vogue

In case you were doubtful, marriages are still very much in vogue in all parts of the United States. This issue provides some insights into the recent demographic trends in marriage and once more proves that the venerable institution has its unpredictable side statistically, just like its folklore reputation.

Accident Prevention: Key in Working Environment

On a more serious note, accidental deaths among men of working ages continue to be one of the United States' most important problems in prevention. These data help us better understand why accident prevention is such a key part of every American working environment. Behind these numbers are tragic stories of men with dependents whose loss cannot be adequately measured in our humble tables and figures. The implications are sobering.

Problems of Doctors

Capsule Briefs this issue highlights the increased problems of doctors in today's changing and stressful medical care market place. Because of physicians' role in medical care, their problems will become everyone's in time. What are your reactions to these news notes?

Life Expectancy at a Plateau

Length of life expectations for newborns in the United States has reached a plateau at 74.7 years. Though boy babies born last year can expect a 0.1 year increase, baby girls born in 1985 are expected to live slightly less time (0.2 years) than those in 1984. At the same time, minority life expectancy is increasing, which is good news. How many more years may this plateau continue? *SB* does not know, have you a forecast?

A New SB Department

And now, introducing a new member of our *SB* departments, "Statistical Information, Please." For those longtime readers with matching memories, this department will be remembered for its brief appearance during the early 1940s. It has returned to assist readers with perplexing statistical questions. We hope you will write. We'll publish those we think have greatest reader interest.

On that note of personal inquiry, I wish you good reading. □

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

Costs for Cesarean Section: Regional Variations

The cesarean section rates in the United States more than quadrupled from 1965 to 1984. They rose from 4.5 percent of all births in 1965 to 21.1 percent of deliveries in 1984. In 1983 cesarean sections (C-sections) ranked No. 2 among the 10 most common surgical procedures performed on patients under 65, with a record 808,000 operations reported.[1, 2]

In 1983 cesarean sections ranked No. 2 among the 10 most common surgical procedures performed on patients under 65.

Increasing Rates a Growing Public Health Concern

The frequency of cesarean childbirth and the dramatic increase in rates have been receiving increased professional and public attention for more than a decade and a half. The growing concern centers on at least four factors: (1) rates in the United States are high and continue to rise faster than those in other developed countries; (2) an increased risk of injury and/or death exists among mothers during a C-section in comparison to a vaginal delivery; (3) some observers believe there is an increased risk of morbidity among infants delivered by cesarean; and (4) medical care charges associated with this form of delivery are approximately twice those of a vaginal birth because of higher ancillary expenses and physicians' fees, as well as longer hospitalization for both mother and infant, and a longer period of rehabilitation for the mother.[3-6] These and other issues prompted the National Institute of Child Health and Human Development in 1980 to hold a consensus development conference on C-sections.

By late 1981 the conference recommendations and a summary of its findings were distributed to the medical community in general, and the obstetrical community in particular. The consensus conference statement acknowledged that the rising cesarean rates were of concern and were in need of immediate attention. The members judged that the trend "may be stopped and perhaps reversed, while continuing to make improvements in maternal and fetal outcomes. . ." Recommendations for actions and goals for further investigation were outlined in the conference statement.[6] Yet, cesarean birth rates have continued to increase. It is clear that much more needs to be done to decrease the unacceptably high rate of cesareans in the United States and to try to counter the long held practice of "once a C-section, always a C-section."

Rates of cesarean sections in the United States have more than quadrupled since 1965.

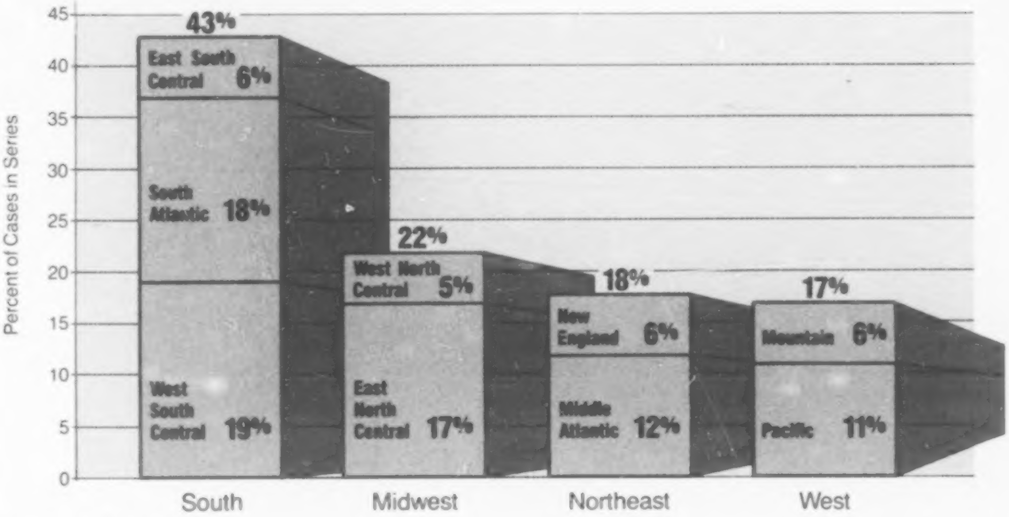
Reasons for the increasing rates continue to be the subject of much controversy and study. Certain tendencies clearly contribute to these rate increases: fear of litigation, changes in the management of certain high-risk or difficult births (e.g., breech presentations or forceps delivery), increased use of monitoring equipment during labor, disproportionate number of repeat cesareans, and the high number of C-sections among young women, which will tend to result in future surgical deliveries.[7, 8]

David Johnson

Regional Differences in Cesarean Section Rates

Regional differences in the rates of C-sections have persisted for more than a decade. As shown in the Commentary (p. 9), the highest proportions of cesarean deliveries have been reported in the Northeast and South regions of the United States and the lowest in the West and Midwest. Metropolitan areas report rates higher than nonmetropolitan areas even after controlling for mother's age and the birth weight of the baby. Despite considerable investigation of these patterns, there is little agreement among experts about their cause. The issues continue to be debated, but many researchers conclude that the variations in C-section rates are not due to geographic differences in the distribution of high-risk populations.[7, 9]

Figure A—Distribution of Cesarean Section Cases by Geographic Area and Division, With Average Charges and Length of Stay for Major Divisions January 1, 1982–June 30, 1983



	South	Midwest	Northeast	West
Average Total Costs:	$3,780	$4,310	$4,390	$4,550
Average Length of Stay:	5.73	6.41	7.01	5.02

Source of basic data: Claims data from Metropolitan Life Insurance Company merged and edited by Corporate Health Strategies, Inc.; analysis and calculations by Health and Safety Education Division personnel.

Metropolitan Life Study

Not only do regional differences exist in the proportion of C-sections, but differences also exist in the cost of this surgery. Epidemiologists and statisticians at Metropolitan Life studied the charges associated with cesarean childbirth for the period January 1, 1982 through June 30, 1983. Based on group health insurance total claims paid by the Metropolitan Life Insurance Company, Corporate Health Strategies, Inc. linked hospital and physician claims for cesareans performed during this period. A total of 8,636 typical* C-sections were performed on employees and dependents insured under Metropolitan Life group health contracts. Average medical/surgical and hospital charges are presented in this analysis by state and geographic area for women between the ages of 15 and 44 (modal age was 26). Presentation of data is restricted to those 34 states in which 50 or more C-sections were performed; these data represent 95 percent of the reported cases.

---

* "Typical" surgeries exclude length-of-stay outliers and fall within 97.2 percent of the usual length of stay criteria outlined in the diagnosis related group (DRG) criteria

The distribution of cesarean cases is presented in Figure A for all nine geographic areas of the United States and collapsed into the four major divisions referred to in the medical literature. Of interest is the fact that the lowest total charge ($3,780) among the four major divisions was recorded in the South—the division that contributed the largest proportion of cases in this series and which reported the second shortest length of hospital stay. The obverse of this was also true. That is, the highest charge ($4,550) was recorded in the West—the division that contributed the smallest proportion of cases and in which the shortest length of stay was recorded.

Cost Variation by Region

The average total charge in 1982–83 for a cesarean birth in the United States was $4,130 with marked variation between the nine regions (Figure B). The Pacific region reported average total charges close to $5,000—charges that were 21 percent above the national average. The second highest charge was reported in the Middle Atlantic region with a cost of $4,690, 14 percent above that for the entire United States. The only other region to report costs in excess of the national average was the East North Central, where the cost was 7 percent higher. Two-thirds of the regions reported costs below the national average, indicating the skewness of the distribution caused by the average charges in the highest regions. The lowest average charge was in the East South Central region, averaging 14 percent below that of the nation.

State Variation in Costs

Total charges for a cesarean birth differed by as much as 182 percent between individual states (Table, page 7). The District of Columbia* led in total charges, 30 percent above the national average; this high cost was followed closely by the charges reported in California, Illinois and New York, $5,300, $5,300 and $5,290, respectively, each 28 percent above the average. The total charge for Florida was the only other case where the cost exceeded the national average by 10 percent or more.

Total charges for a cesarean birth differed by as much as 182 percent between the individual states.

The lowest total C-section charge was in Utah, $2,940, or 29 percent below the national average and 45 percent lower than the high cost in the District of Columbia. Similarly low charges were recorded in Kentucky, Mississippi, Iowa, Washington, South Carolina, and Minnesota, where charges were between 25 and 20 percent below the average. Seven states, Arkansas, North Carolina, Louisiana, Connecticut, Georgia, Tennessee and Texas, averaged charges ranging from 18 to 12 percent below the norm.

Physician and Hospital Charges

As seen in the accompanying table, on average, 69 percent of the total insurance charges for a cesarean birth was attributable to hospital charges (i.e., room and board and ancillary fees). By state, these

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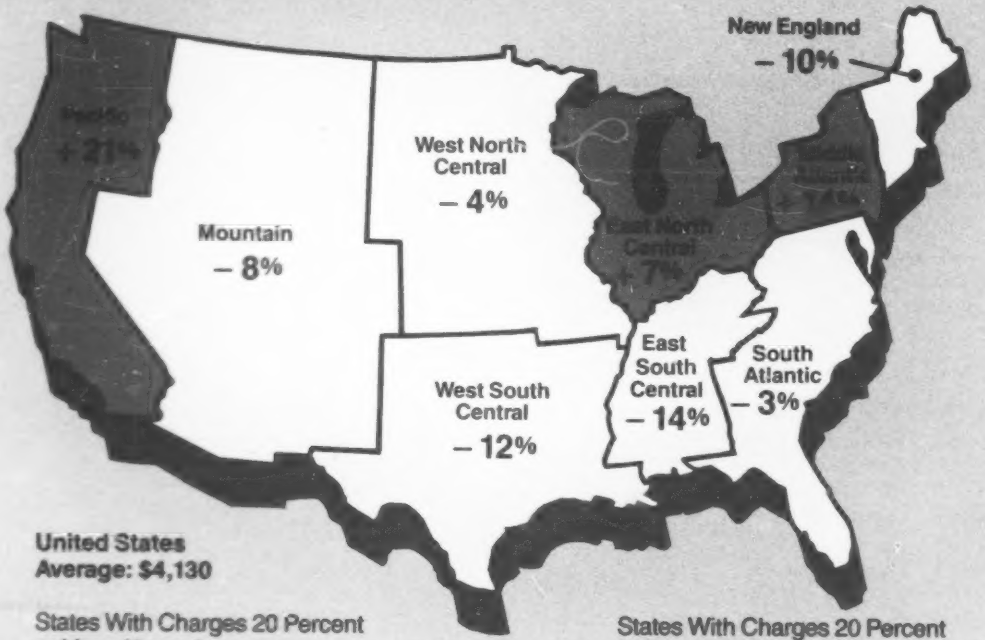
*The average charges for the District of Columbia are based on a total of 72 cases.

Figure B—Cesarean Section Charges by Geographic Area January 1, 1982–June 30, 1983


New England
− 10%
Pacific
+ 21%
Mountain
− 8%
West North Central
− 4%
East North Central
+ 7%
Middle Atlantic
+ 14%
West South Central
− 12%
East South Central
− 14%
South Atlantic
− 3%

United States Average: $4,130

States With Charges 20 Percent or More Above Average:

District of Columbia	+ 30%
California	+ 28%
Illinois	+ 28%
New York	+ 28%

States With Charges 20 Percent or More Below Average:

Utah	− 29%
Kentucky	− 24%
Mississippi	− 24%
Iowa	− 23%
Washington	− 21%
South Carolina	− 21%
Minnesota	− 20%

Source: See Table.

proportions ranged from 77 percent in Michigan and Missouri to 64 percent in Maryland and California.

Ancillary charges (including operating room charges, laboratory and blood bank fees, etc.) averaged three-fifths of the hospital bill. These charges typically were one and one-half times the room and board charges. In some states, however, ancillary charges ranged from two to almost three times greater than room and board. The highest ancillary charges were recorded in Illinois, Alabama, Missouri, California and Florida, all over $2,000 and more than 20 percent above the average.

Physician charges were found to vary extensively both between geographic areas and individual states. The average physician charge for a C-section was $1,270. Again, the Pacific area reported the

Regional Variations in Charges for Cesarean Section*
January 1, 1982–June 30, 1983

	Average Costs ($)						Percentage	
		Hospital Charge						
Geographic Area	Total Hospital & Physician	Total	Room & Board	Ancillary	Physician Charge	Average Length of Stay	Hospital of Total	Ancillary of Hospital
UNITED STATES	4130	2860	1150	1710	1270	5.99	69	60
New England	3720	2580	1190	1390	1140	6.12	69	54
Connecticut	3630	2360	1120	1240	1270	6.10	65	53
Massachusetts	3970	2840	1300	1540	1130	6.39	72	54
Middle Atlantic	4690	3230	1760	1470	1460	7.40	69	46
New Jersey	4120	2790	1270	1520	1330	6.69	68	54
New York	5290	3510	2310	1200	1780	8.68	66	34
Pennsylvania	4310	3110	1390	1720	1200	6.40	72	55
East North Central	4430	3290	1370	1920	1140	6.48	74	58
Illinois	5300	4010	1670	2340	1290	6.81	76	58
Indiana	3810	2710	1040	1670	1100	6.38	71	62
Michigan	4290	3310	1460	1850	980	6.14	77	56
Ohio	4110	3040	1270	1770	1070	6.34	74	58
Wisconsin	3910	2730	1140	1590	1180	6.49	70	58
West North Central	3950	2950	1090	1860	1000	6.20	75	63
Iowa	3200	2290	930	1360	910	5.55	72	59
Kansas	4050	2970	1090	1880	1080	5.90	73	63
Minnesota	3300	2290	910	1380	1010	5.88	69	60
Missouri	4310	3300	1190	2110	1010	6.58	77	64
South Atlantic	4010	2730	980	1750	1280	5.84	68	64
District of Columbia	5350	3710	1770	1940	1640	6.31	69	52
Florida	4650	3050	970	2080	1600	5.60	66	68
Georgia	3630	2490	750	1740	1140	5.67	69	70
Maryland	3920	2510	1150	1360	1410	5.96	64	54
North Carolina	3440	2470	900	1570	970	6.12	72	64
South Carolina	3280	2350	810	1540	930	6.01	72	66
Virginia	3820	2690	1130	1560	1130	5.98	70	58
East South Central	3550	2560	830	1730	990	5.92	72	68
Alabama	4140	3110	910	2200	1030	6.14	75	71
Kentucky	3120	2120	970	1150	1000	6.12	68	54
Mississippi	3150	2190	590	1600	960	5.58	70	73
Tennessee	3640	2680	820	1860	960	5.83	74	69
West South Central	3630	2420	840	1580	1210	5.56	67	65
Arkansas	3390	2380	700	1680	1010	5.29	70	71
Louisiana	3610	2470	740	1730	1140	5.22	68	70
Oklahoma	3820	2620	980	1640	1200	5.99	69	63
Texas	3630	2380	860	1520	1250	5.59	66	64
Mountain	3810	2610	940	1670	1200	5.06	69	64
Arizona	3720	2480	850	1630	1240	4.79	67	66
Colorado	4190	2920	1100	1820	1270	5.51	70	62
Utah	2940	1980	830	1150	960	4.94	67	58
Pacific	4990	3230	1250	1980	1760	5.00	65	61
California	5300	3410	1310	2100	1890	5.07	64	62
Washington	3270	2160	920	1240	1110	4.60	66	57

Note: Fewer than 50 cases; charges not shown.
*Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company.
Source: Claims data from Metropolitan Life Insurance Company, merged and edited by Corporate Health Strategies, Inc.; analysis by Health and Safety Education Division personnel.

highest costs, $1,760, almost 40 percent above the United States average.

The highest physician charge was found in California, where the $1,890 fee was 49 percent higher than the U.S. total.

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The fee in New York was the second highest, $1,780, 40 percent above the average. The District of Columbia and Florida followed with charges 29 and 26 percent above the norm. The lowest physician charge was that in Iowa of $910, a fee less than half the California fee and 28 percent below the national average.

Considerable between-state variation was evident in the length of the hospital stay reported for a typical C-section. Women in New York averaged the longest stay, 8.68 days (45 percent above the average of 5.99 days); this surgery required 4.60 days in the hospital for women in Washington. Only two other states, Arizona and Utah, reported hospital stays fewer than five days. California, in which total and component charges were high, ranging from 14 to 49 percent above the national average, reported a length of stay 15 percent *below* the norm, 5.07 days. For California, the observed C-section disparity in higher total charges and relatively low length of stay is part of a pattern in most DRGs.

Whatever accounts for rising cesarean rates and cost disparities, it seems time for heightened public awareness and greater national (and regional) discussion of the issues. For instance, a need exists for increased consumer and provider education about the medical feasibility of a vaginal birth after a cesarean in selected patients, which as a single cause, could lead to a dramatic reduction in cesarean birth rates. In addition, as the 1981 consensus conference report indicated, an increase in monitoring and public reporting of cesarean birth rates by hospitals should be encouraged in an effort to increase public awareness and to help erase C-section decisions of an uninformed nature. Greater emphasis by peer review committees should be given to indications for C-section by staff obstetricians. Because any surgery carries risks, elimination of all *unnecessary* cesareans is clearly in the nation's interest. Ultimately, safe, optimal and cost-effective medical care for the mother and her baby is everyone's goal for childbirth. □

References

[1] Placek, P.J., Taffel, S.M. National Center for Health Statistics. National Hospital Discharge Data, 1986. Unpublished summary of data.

[2] National Center for Health Statistics, Graves, E.J. *1983 Summary: National Hospital Discharge Survey. Advance Data From Vital and Health Statistics.* No. 100 DHHS Pub. No. (PHS) 84-1250. Public Health Service, Hyattsville, Md., Sept. 28, 1984.

[3] "Digest: Avoiding unnecessary repeat cesarean deliveries may help stem overall rise in C-section rates." *Family Planning Perspectives.* 17(3): 125–127, 1985.

[4] Petitti, D.B., Cefalo, R.C., Shapiro, S., Wholley, P. "In-hospital maternal mortality in the United States: Time trends in relation to method of delivery." *Obstet. Gynecol.*, 59: 6–12, 1982.

[5] Gleicher, N. "Cesarean section rates in the United States." *JAMA.* 252(23): 3273–3276, 1984.

[6] "NIH Consensus Development Task Force statement on cesarean childbirth." *J. Obstet. Gynecol.* 139(8): 902–909, 1981, and U.S. Department of Health and Human Services. *Cesarean Childbirth: Report of a Consensus Conference.* NIH Pub. No. 82-2067. Bethesda, Maryland: NIH, 1981.

[7] Placek, P.J., Taffel, S.M. "Trends in cesarean section rates for the United States, 1970–78." *Pub. Health Reports.* 95(6): 540–548, 1980, and Placek, P.J., Taffel, S.M., Moien, M. "Cesarean section delivery rates: United States, 1981." *AJPH.* 73:861–862, 1983.

[8] Taffel, S.M., Placek, P.J. "One-fifth of 1983 U.S. births by cesarean section." *AJPH.* 75:190, 1985.

[9] Williams, R.L., Chen, P.M. "Controlling the rise of cesarean section rates by the dissemination of information from vital records." *AJPH.* 73:863–867, 1983.

Commentary

Cesarean Rate Still Rising

The year 1984 marked the twentieth consecutive year in which cesarean rates have increased, and they now represent more than one-fifth of United States' deliveries. We at the National Center for Health Statistics began studying cesareans in 1965, using National Hospital Discharge Survey data. At that time cesareans represented 4.5 percent of the nation's annual deliveries.[1-5]

International comparisons with 16 developed countries reveal that the United States leads all of these countries in the rate of deliveries performed by cesarean.[6] In 1981, 17.9 out of every 100 births in the United States were by cesarean, while this rate was under ten in Austria, Czechoslovakia, Hungary, Netherlands, New Zealand, Norway, Portugal, and England and Wales, and under fifteen in Australia, Denmark, Bavaria, France, Sweden and Scotland. The Canadian rate has closely trailed the rising United States rate by about one point for the past decade.

Widespread Change in Obstetrical Practice?

Regional patterns in cesarean birth rates have persisted over the years (see table). These minor differences may be explained in part by the age and race of mothers, types and sizes of hospitals in the area, forms of insurance coverage and differing rates of diffusion of new obstetric technologies. More striking, however, is that cesarean deliveries have increased within all regions of this country, for all age groups, all marital statuses, all racial groups, and in all types and sizes of hospitals. The relative uniformity of the increase suggests there has been a widespread change in obstetrical practice over the last two decades.

Since 1970 the rate of cesareans among teenagers has increased five-fold compared with a three- to four-fold increase among older mothers. This is particularly significant because almost all of their subsequent deliveries will be by cesarean, thus giving impetus to the rising rate. In 1983 and 1984, only about five percent of women had a vaginal birth after previously delivering by cesarean; 95 percent had repeat cesareans. In 1982 and again in 1985, the American College of Obstetricians and Gynecologists (ACOG) issued guidelines in an attempt to reduce repeat cesareans. The President of ACOG has stated that many repeat cesareans could *safely* be avoided, and concludes that the "once a section, always a section" medical dictum is obsolete.[7,8]

Cesareans per 100 Deliveries by Region: United States

Year	United States	Region			
		Northeast	Midwest	South	West
1970	5.5	6.2	4.7	5.8	5.7
1975	10.4	11.9	9.3	10.5	9.9
1980	16.5	19.2	14.9	16.8	15.3
1983	20.3	21.5	18.8	21.3	19.1
1984	21.1	21.4	18.9	22.7	20.6

Major changes in the surgical management of breech presentations and a halving of forceps-assisted deliveries from 1972 to 1980 have also led to increases in the cesarean rate. In 1970 only one-sixth of breech presentations were delivered by cesarean, but in 1984 three-fourths of these were surgically delivered.[9-11] Such changes have important ramifications for medical practice in the safe delivery of babies who present in difficult positions.

Implications for Health Care Costs

The continuing rise in the cesarean birth rate has important implications for health care costs and medical providers. The average length of stay for a cesarean delivery is 5.8 days, almost twice the 3.0 days reported for mothers who vaginally deliver. We have also found that the rate of cesarean births is higher among women with private health insurance and lower for women with government or no coverage. Finally, obstetricians frequently mention fear of malpractice lawsuits and the practice of defensive medicine as a factor in the rising cesarean rate.

This leads to the issue of whether the extra days of hospitalization, other expenses associated with surgical delivery, and increased risk of maternal mortality can be balanced against the savings associated with the birth of a healthy baby. Statisticians like me may not be qualified to judge whether a "standard" or "ideal" cesarean rate can (or even should) be established. Certainly, maternal and fetal outcome should not be compromised for efficiency's sake. Similarly, few would take issue with goals of increased childbirth education and heightened awareness by obstetricians concerning the option of vaginal birth after cesarean. □

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References

[1] Placek, P.J., Taffel, S.M.: "Trends in cesarean section rates for the United States, 1970-78." *Public Health Rep.*, 95:540-548, 1980.

[2] Placek, P.J., Taffel, S.M.: "United States cesarean section rate rises higher in 1979." *Public Health Rep.*, 96:183, 1981.

[3] Placek, P.J., Taffel, S.M.: "One-sixth of 1980 United States births by cesarean section." *Public Health Rep.*, 97:380, 1982.

[4] Placek, P.J., Taffel, S.M., Moien, M.: "Cesarean section delivery rates: United States, 1981." *AJPH*, 73(8):861-862, 1983.

[5] Taffel, S.M., Placek, P.J., Moien, M.: "One-fifth of 1983 United States births by cesarean section." *AJPH*, 75(2):190, 1985.

[6] Notzon, F.C., Taffel, S.M., Placek, P.J.: "Cross-national comparisons of cesarean section rates." Presented at the American Public Health Association meetings, Washington, D.C., Nov. 18-22, 1985.

[7] American College of Obstetricians and Gynecologists: "Guidelines for vaginal delivery after a cesarean childbirth." Statement of the Committee on Obstetrics: Maternal and Fetal Medicine. Washington, D.C.: ACOG, February 24, 1982, and American College of Obstetricians and Gynecologists: "New Guidelines to Reduce Repeat Cesareans." Statement by Dr. L. Klein for Vaginal Birth After Cesarean News Conference. ACOG News Release, January 25, 1985.

[8] Klein, L.: "Cesarean birth and trial of labor." *The Female Patient*, 9:106-117, 1984.

[9] Placek, P.J., Taffel, S.M.: "Trend in complications associated with cesarean and non-cesarean deliveries: United States, 1970 and 1978." *Public Health Rep.*, 98:396-400, 1983.

[10] Taffel, S.M., Placek, P.J.: "Complications in cesarean and non-cesarean deliveries: United States, 1980." *AJPH*, 73:856-860, 1983.

[11] Placek, P.J., Taffel, S.M., Keppel, K.G.: "Maternal and infant characteristics associated with cesarean section delivery." *Health, United States, 1983.* Washington, D.C.: National Center for Health Statistics, U.S. Department of Health and Human Services, December 1983.

Recent Trends in Marriage

The marriage rate in the United States declined during 1985 to the lowest level since 1977. The 1985 rate was 10.2 per 1,000 population—3 percent below the rate of 10.5 for 1984, the lowest level in eight years. Last year's provisional count of 2,425,000 couples married represents a 2 percent decrease from the record total of 2,487,000 reported in 1984.

Marriages in the United States typically follow a seasonal pattern

Marriages in the United States typically follow a seasonal pattern. Most occur in the summer, particularly in June, while relatively few couples exchange vows in January. In 1985, 280,000 marriage ceremonies were performed in June, resulting in a marriage rate of 14.3 per 1,000, while the rate in January was just 6.4 per 1,000, reflecting 129,000 marriages.

Although the marriage rate fluctuates significantly by month, only slight variations have occurred in the national trend since the late 1960s. Immediately after World War II, the marriage rate soared to a peak of 16.4 per 1,000 in 1946. The rate remained above 10 per 1,000 through 1951 and then declined to a postwar low of 8.4 per 1,000 in 1958.

The number of marriages per 1,000 population gradually rose again, exceeding 10 per 1,000 only after 1967. Beginning in 1968 and carrying through 1985, the marriage rate remained relatively stable, not rising above 10.9 per 1,000, nor falling below 9.9 per 1,000. Table 1 shows selected values in the trend of the number of marriages and marriage rates since 1940, while Figure A presents graphically the yearly data.

Variations by State and Region

Recent state and regional trends in marriage rates have shown considerable variation. Only 11 states reported more marriages in 1985 than in 1984. The largest increase occurred in Arizona, where the number of marriages rose by 12.9 percent from 31,506 to 35,567. The next largest relative increase was recorded in Connecticut—namely 8.5 percent—followed by Kentucky with 6.7 percent. In Vermont, marriages increased by 4.6 percent between 1984 and 1985, while in Florida, Texas and Hawaii, the percentage gain was around 3 percent. On the other hand, the number of couples marrying in Michigan, Missouri and Maine declined by 9 percent.

Only 11 states reported more marriages in 1985 than in 1984.

The number of marriages by state parallels total population size.

The number of marriages by state parallels total population size. California, for instance, reported more marriages in 1985 than any other state, 226,000. In New York, the second most populous state, almost 165,000 couples married during 1985. For both of these large states, last year's weddings represented a slight decline from 1984. In Texas, nearly 214,000 marriages were reported during 1985—just 12,000 fewer than in California. The only other states to experience more than 100,000 marriages were Florida and Nevada. Table 2 presents the number of marriages by state during the period 1982-85.

Generally, the marriage rate is a better indicator than the count of marriages.

Occasionally, curiosities occur in marriage statistics. Generally, the marriage rate is a better indicator than the count of marriages. In computing states' rates, however, Nevada is the exception proving the rule. It has a relatively small population, but its proximity to California and statutes that make wedding arrangements easier have resulted in a marriage rate that is disproportionately higher than rates in other states.

In the United States, the marriage rate is calculated by the place where the wed-

Table 1—Marriages and Marriage Rates United States, 1940–1985

Year	Number of Marriages	Rate per 1,000 Population
1985 (Prov)	2,425,000	10.2
1984 (Prov)	2,487,000	10.5
1983	2,445,604	10.5
1982	2,456,278	10.6
1981	2,422,145	10.6
1980	2,390,252	10.6
1975	2,152,662	10.0
1970	2,158,802	10.6
1965	1,800,000	9.3
1960	1,523,000	8.5
1955	1,531,000	9.3
1950	1,667,231	11.1
1945	1,612,992	12.2
1940	1,595,879	12.1

Source: National Center for Health Statistics, Monthly Vital Statistics Reports.

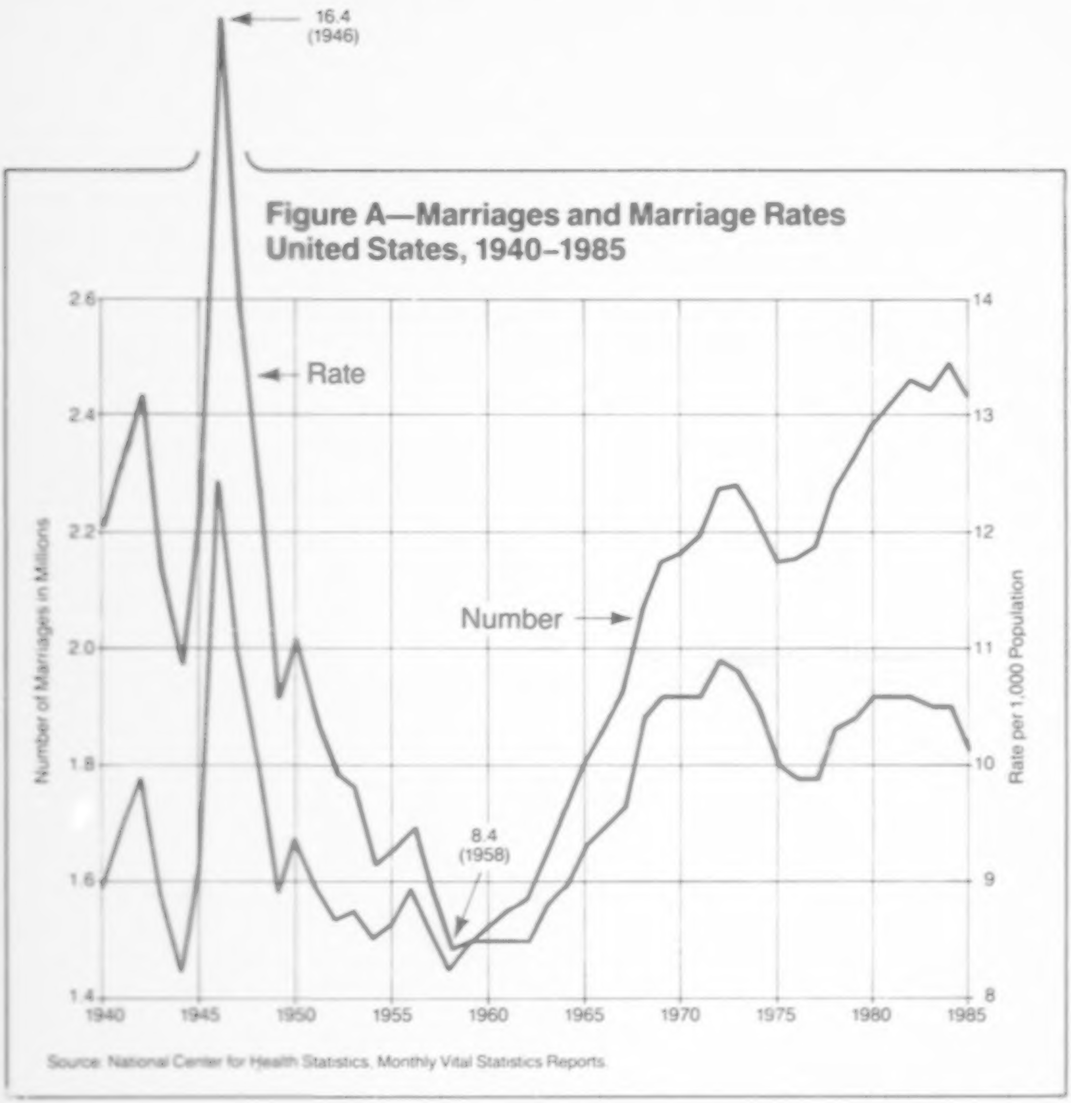


Figure A—Marriages and Marriage Rates United States, 1940–1985

Source: National Center for Health Statistics, Monthly Vital Statistics Reports.

ding occurred. Excluding Nevada, the 1985 marriage rate was highest in South Carolina—15.8 per 1,000. Hawaii experienced a rate of 14.5 per 1,000 while Texas and Arkansas reported a rate of about 13.0 per 1,000. The lowest marriage rate during 1985 occurred in Pennsylvania—namely 7.5 per 1,000. A year earlier the rate in Pennsylvania was 7.8 per 1,000—also the lowest value. Other states that reported 1985 marriage rates of 8.0 per 1,000 or less were North Dakota, West Virginia and Nebraska. Figure B shows the states with the highest or lowest marriage rates.

Wedding Forecasts Look Bright

It's always interesting to estimate the future outlook for marriage statistics. A recent report by the Social Security Administration has a forecast that the total number of mar-

Table 2—Marriages in the United States, 1982–85

Geographic Area	1982	1983	Prov. 1984	Prov. 1985	Percent Change 1984–85	Rate per 1,000 Population 1985
New England	111,925	112,732	115,388	114,855	-.5	9.1
Maine	12,388	12,480	12,430	11,257	-9.4	9.7
New Hampshire	10,584	10,971	11,363	11,159	-1.8	11.2
Vermont	5,568	5,595	5,375	5,622	4.6	10.5
Massachusetts	48,654	48,789	53,198	51,648	-2.9	8.9
Rhode Island	7,885	8,053	7,942	7,963	.3	8.2
Connecticut	26,846	26,844	25,080	27,206	8.5	8.6
Middle Atlantic	310,019	316,291	323,648	314,466	-2.8	8.5
New York	156,720	162,398	168,860	164,864	-2.4	9.3
New Jersey	59,949	61,798	62,192	60,915	-2.1	8.1
Pennsylvania	93,350	92,095	92,596	88,687	-4.2	7.5
East North Central	390,631*	377,400*	384,412	365,661	-4.9	8.8
Ohio	102,905*	99,956*	98,708	94,176	-4.6	8.8
Indiana	55,924	53,982	52,705	52,688	0	9.6
Illinois	107,023	103,800	102,504	97,912	-4.5	8.5
Michigan	82,633	78,910	89,391	80,813	-9.6	8.9
Wisconsin	42,146	40,752	41,104	40,072	-2.5	8.4
West North Central	173,982	169,855	169,958	157,251	-7.5	9.0
Minnesota	37,409	36,259	36,873	34,458	-6.5	8.2
Iowa	27,188	26,769	26,960	24,720	-8.3	8.6
Missouri	53,836	53,258	54,148	49,014	-9.5	9.7
North Dakota	6,176	5,976	5,806	5,467	-5.8	8.0
South Dakota	8,353	8,013	8,035	7,836	-2.5	11.1
Nebraska	14,350	13,703	13,341	12,185	-8.7	7.6
Kansas	26,670	25,877	24,795	23,571	-4.9	9.6
South Atlantic	429,808	434,638	447,108	443,595	-.8	11.0
Delaware	4,827	5,569	5,463	5,345	-2.2	8.6
Maryland	47,867	47,619	46,815	47,069	.5	10.7
District of Columbia	5,571	5,436	5,488	5,040	-8.2	8.1
Virginia	62,099	61,858	65,976	66,670	1.1	11.7
West Virginia	16,467	15,930	15,456	14,649	-5.2	7.6
North Carolina	51,058	52,128	52,123	50,575	-3.0	8.1
South Carolina	53,496	53,691	55,882	52,776	-5.6	15.8
Georgia	72,603	73,442	75,817	73,541	-3.0	12.3
Florida	115,820	118,965	124,088	127,930	3.1	11.3
East South Central	167,120*	168,279*	172,856	172,440	-.2	11.4
Kentucky	34,238*	37,422*	44,006	46,949	6.7	12.6
Tennessee	57,867	56,467	55,205	54,942	-.5	11.5
Alabama	47,431	47,469	47,487	45,816	-3.5	11.4
Mississippi	27,584	26,921	26,158	24,733	-5.4	9.5
West South Central	319,929	316,323	318,965	319,464	.2	12.1
Arkansas	28,041	30,066	31,427	30,496	-3.0	12.9
Louisiana	45,581	43,177	41,295	39,666	-3.9	8.9
Oklahoma	47,660	44,043	38,612	35,536	-8.0	10.8
Texas	198,647	199,037	207,631	213,766	3.0	13.1
Mountain	240,493	239,066	232,226	233,165	.4	18.2
Montana	8,185	8,092	7,677	7,179	-6.5	8.7
Idaho	14,065	13,421	12,518	12,542	.2	12.5
Wyoming	6,799	6,201	5,723	5,355	-6.4	10.5
Colorado	37,739	36,114	34,630	33,938	-2.0	10.5
New Mexico†	17,614	17,872	15,171	14,585	-3.9	10.1
Arizona‡	31,408	30,809	31,506	35,567	12.9	11.2
Utah	18,427	18,437	17,579	17,077	-2.9	10.4
Nevada	106,256	108,120	107,422	106,922	-.5	114.2
Pacific	312,371	311,020	315,294	314,579	-.2	9.0
Washington	48,228	46,294	44,730	44,514	-.5	10.1
Oregon	24,186	23,346	22,594	22,414	-.8	8.3
California	220,064	220,760	226,560	226,150	-.2	8.6
Alaska	6,410	6,558	6,519	6,182	-5.2	11.9
Hawaii	13,483	14,062	14,891	15,319	2.9	14.5

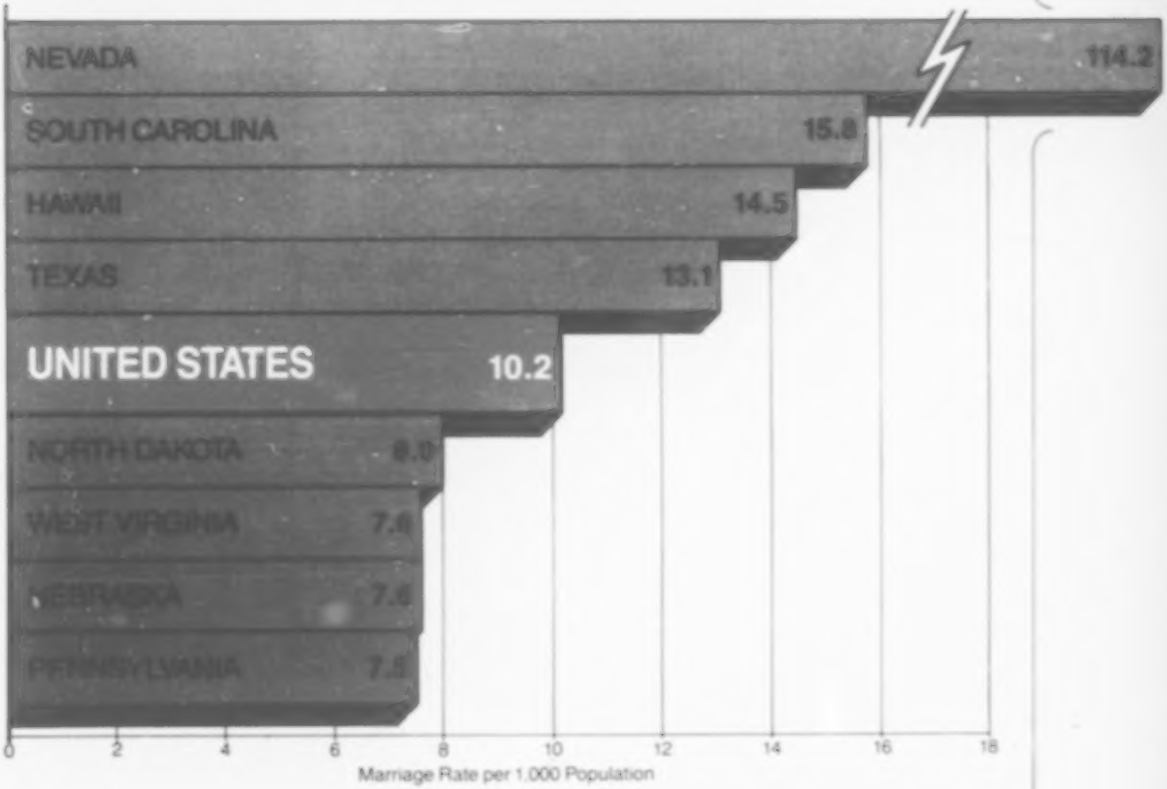
*Incomplete data. †Licenses issued.

‡Includes licenses for some counties.

Note: Data are by state of occurrence and should be interpreted accordingly. Sum of states do not equal total for United States because not all data have been adjusted for revisions.

Source: National Center for Health Statistics, Monthly Vital Statistics Reports.

Figure B—States With Highest and Lowest Marriage Rates
United States, 1985



riages will rise slightly in the next few years.[1] However, in interpreting their estimate we need to recognize that such projections are very sensitive to changes in economic conditions, which could markedly alter the actual experience.

Marriage statistics, like the institution itself, have had an unpredictable, varied course over time. Despite the variability, trends are clearly discernible. Patterns in marriage statistics between and within years, as well as among states, tell us about marriage's enduring qualities. □

References

[1] Social Security Administration, Office of the Actuary. "Social Security Area Population Projections 1985. Actuarial Study No. 95." DHHS Pub. No. 11-11542. October 1985.

Capsule Briefs

are timely literature selections with broad reader interest.

Farewell, Private Practice.

Young physicians are not entering private practice today at the same rate their elders did. While "private practice hasn't disappeared, it is slipping away," according to a recent AMA survey. Nearly 40 percent of M.D.s under age 36 were employees in 1983, compared with 23 percent between the ages 36-45. Increasingly, newer graduates seek positions in HMOs, clinics, emergency rooms or large group practices. These jobs provide freedom for life away from medicine, e.g., family, recreational needs, community activities, not available to fee-for-service, self-employed M.D.s. (Wessel, D., *Wall Street Journal*, p. 1, January 13, 1986.)☐

Incompetence Will Out?

Medicare, the federal medical insurance program for the elderly, has a problem with doctors whose "clinical competence is in doubt," according to a recent study by the Inspector General of the Health and Human Services Department. The report calls this a "major issue" because of the lives lost to medical incompetence and because the problem "unnecessarily adds billions of dollars to the nation's annual health expenditures." State medical licensure boards often do little to assist in the issue's resolution because of their backlog of cases. New York, for example, has 1,500 uninvestigated complaints. (Brinkley, J., *New York Times*, p. A21, February 4, 1986.)☐

The Toll of Training.

The stress of practicing medicine begins earlier than most people realize, according to this report. From a survey covering the years 1979-84, over half of the directors of internal medicine residency programs reported that leaves of absence were granted to one or more medical residents under their direction in these years because of emotional impairment. Most impaired residents recovered, for 79 percent continued in medicine, although 10 percent dropped out, 2 percent committed suicide, and another 3 percent attempted suicide unsuccessfully (in 6 percent of the cases outcomes were unknown). (Smith, J.W., *et al. JAMA* 255:1155-1158, 1986.)☐

A Federal Solution?

The professional Foundation for Health Care in Tampa, Fla., is examining the medical care practice patterns of 25-50 physicians, according to this report. The foundation is a nonprofit, peer review organization (PRO) that contracts with the federal government to monitor the health care of Medicare patients. The PRO reported to the federal government that it has 11 M.D.s under "primary review"; another five have been sent letters. Review is occasioned when care provided is strongly suspected to be of inferior quality or represents excess utilization. (*American Medical News*, p. 16, March 7, 1986.)☐

Is Imprisonment Part of the Answer?

The recent court martial and four-year prison sentence of Dr. Donal Billig, resulting from charges before a military court on negligent homicide, left "many in the medical profession wondering if the long-standing debate over how to discipline bad doctors had taken a new turn." As this thoughtful article proceeds, "the conviction comes at a moment of unparalleled concern about the quality of health care." Though experts are agreed that accountability by physicians remains essential for public confidence in medicine, if medical practice is rife with concerns about homicide charges, who will take care of high-risk patients? (Engelberg, S., *New York Times*, p. E5, March 9, 1986.)□

Does M.D.s' Compensation Affect Quality of Care?

This lengthy article does not provide a direct answer, alas, but does review the many unknowns that limit efforts to study this important question. Freedom to function in all spheres of medicine, including compensation, has long been a hallmark of American medicine. The author attempts unsuccessfully to analyze the experience of other Western countries as a means of understanding the quality-compensation issue. Surprisingly, perhaps for some, he finds that American M.D.s more freely provide compensation data to surveyors (e.g., AMA) than do their foreign counterparts. (Reinhardt, U.E., *Quality Review Bulletin* 11(12):366-377, 1985.)□

HMOs: New Irritant for Doctor Glut?

The excess numbers of physicians projected for 1990 by a federal study has a new complicating factor: the growth in enrollment of patients by health maintenance organizations (HMOs). Certain types of physicians appear in great excess now because HMOs use physician's specialty services so efficiently. As a result, there may be 50 percent more internal medicine specialists and 20 percent more pediatricians than needed by 1990. About 12 percent of adult care and 15 percent of child care would be given by physician's assistants by 1990, mainly in clinics and HMOs. The implications for medical school and residency training are painfully clear. (*Journal of Commerce*, January 29, 1986.)□

Which Rate Is Right?

There are threefold differences in regional rates per capita for medical care procedures like coronary bypass surgery. Is the upper rate too high, or are those who live where the lower rates prevail under-served? The answer to these and similar questions affects judgments about the quality of medical care and medical expenditures, as well as the health of all Americans. In this article and accompanying editorial, the authors review the possible explanations and means by which better answers may emerge. Dr. Wennberg concludes his editorial by urging that the medical profession "give priority to this task." (Chassin, M.R., *et al*, *New England Journal of Medicine* 314:285-90; and Wennberg, J., *ibid* 314:310-311, 1986.)□

Accident Mortality Among Men of Working Ages

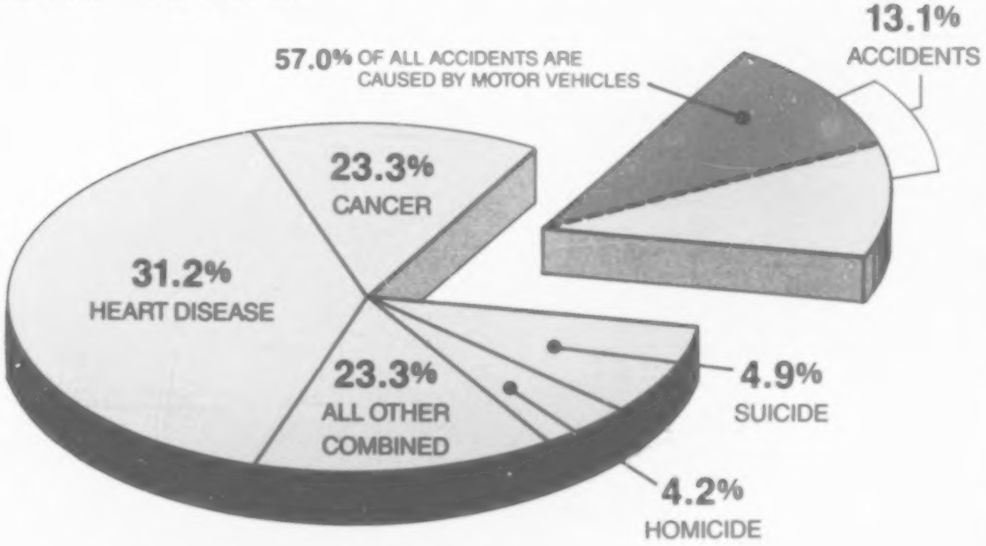
Accidents claimed the lives of 63,902 males in the United States in 1983. Of this total, almost three-quarters (46,223 deaths) occurred among men aged 15-64—men in the years of their greatest productivity and financial responsibility. More than half of all these deaths were the result of motor vehicle accidents; the remainder were divided between home, work and public accidents. Mortality from accidents ranks No. 1 for men in terms of potential years of life lost before age 65.

Mortality from accidents ranks No. 1 for men in terms of potential years of life lost before age 65.

Relative Importance of Accidents Among Leading Causes of Death

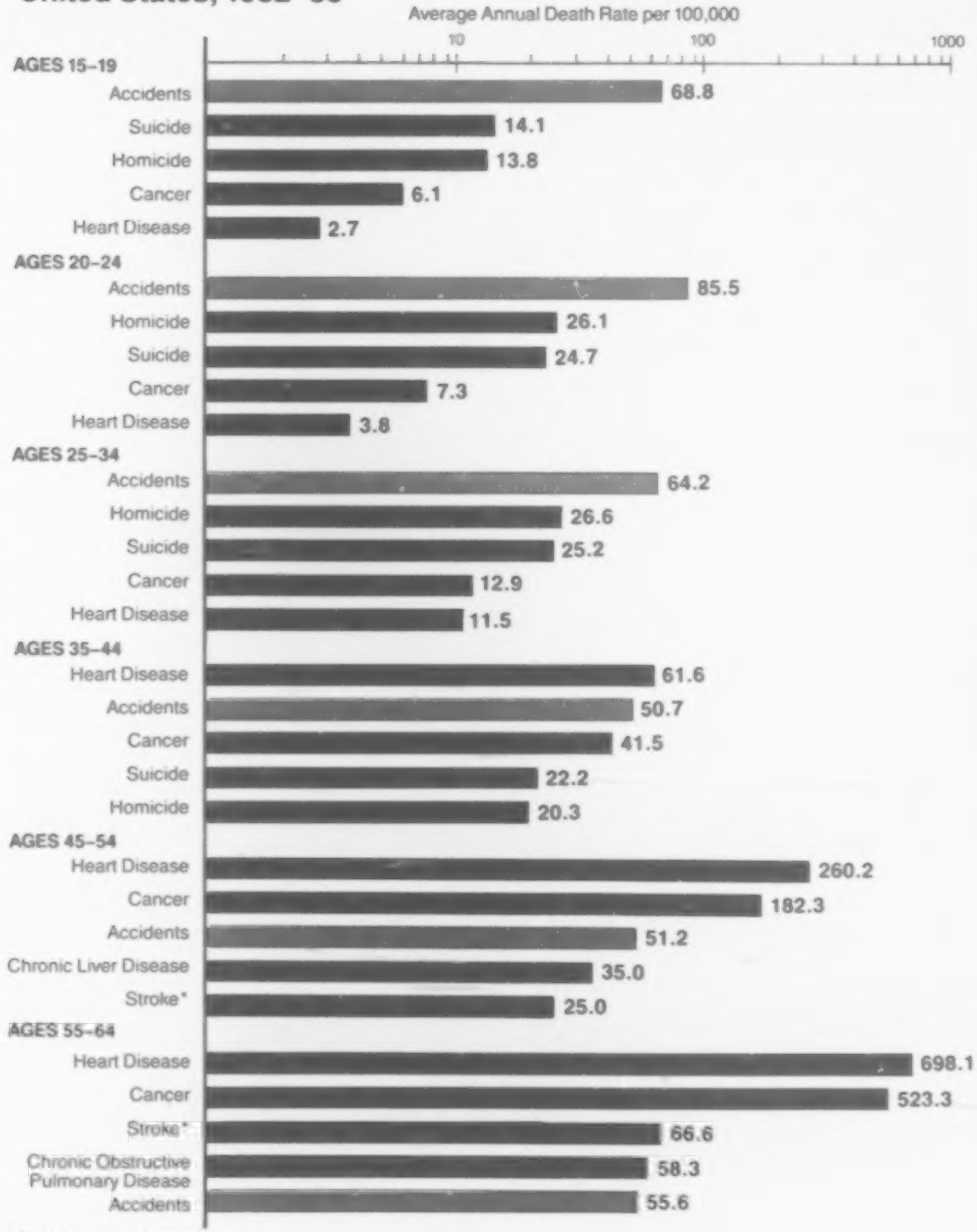
One death of every eight among men between 15 and 64 years of age in 1982-83 resulted from an accident. As seen in Figure A, only heart disease and cancer accounted for more deaths among men between these ages; suicide and homicide,

Figure A--Leading Causes of Death Among Men Aged 15–64 United States, 1982–83



Source of basic data: Reports of Division of Vital Statistics, National Center for Health Statistics.

Figure B—Leading Causes of Death Among Men Aged 15–64 United States, 1982–83



*Cerebrovascular disease.

Source of basic data: Reports of Division of Vital Statistics, National Center for Health Statistics.

Table 1—Mortality From Accidents Among Men Aged 15–64 By Age and Race, United States, 1972–73 and 1982–83

Death Rate per 100,000

Age Group	Total Accidents			Motor Vehicle Accidents			All Other Accidents		
	1972–73	1982–83	Percent Change	1972–73	1982–83	Percent Change	1972–73	1982–83	Percent Change
WHITE									
15–64*	81.9	60.8	–25.8	47.3	36.0	–23.9	34.6	24.8	–28.3
15–19	103.6	74.6	–28.0	71.5	54.8	–23.4	32.1	19.8	–38.3
20–24	114.8	89.3	–22.2	79.0	62.7	–20.6	35.8	26.6	–25.7
25–34	76.4	63.2	–17.3	45.8	37.8	–17.5	30.6	25.4	–17.0
35–44	63.2	47.7	–24.5	33.1	25.3	–23.6	30.1	22.4	–25.6
45–54	68.7	47.3	–31.1	32.0	21.8	–31.9	36.7	25.5	–30.5
55–64	83.4	51.4	–38.4	34.2	20.4	–40.4	49.2	31.0	–37.0
ALL OTHER									
15–64*	124.9	70.1	–43.9	60.4	32.0	–47.0	64.5	38.1	–40.9
15–19	86.9	40.8	–53.0	41.2	22.1	–46.4	45.7	18.7	–59.1
20–24	132.4	65.5	–50.5	74.9	39.7	–47.0	57.5	25.8	–55.1
25–34	123.6	69.9	–43.4	66.2	35.0	–47.1	57.4	34.9	–39.2
35–44	127.1	71.5	–43.7	59.0	31.2	–47.1	68.1	40.3	–40.8
45–54	132.7	80.4	–39.4	58.5	31.5	–46.2	74.2	48.9	–34.1
55–64	148.3	92.2	–37.8	60.0	30.8	–48.7	88.3	61.4	–30.5

*Adjusted on basis of age distribution of the United States total population, 1940.
Source of basic data: Reports of the Division of Vital Statistics, National Center for Health Statistics.

respectively, ranked fourth and fifth among the major causes of death for men in this age group.

Figure B presents the five leading causes of death for men in six age groups between 15-64. Accidents overshadowed all other causes of death among young men 15-34. Between 15-19, accidents claimed more lives than all other causes of death combined and close to five times the number of lives lost from suicide, the second leading cause of death for men in this age group. Accidents also led all other causes of death for men 20-24, and such mortality was more than three times that from homicide in this age group. Not until ages 35-44 does the relative importance of accidents drop below another cause of death, i.e., heart disease. Accidents rank third at ages 45-54 and fifth at ages 55-64, just below chronic obstructive pulmonary disease. This shift is more a reflection of the sharp rise with age in mortality from cancer and cardiovascular diseases, rather than a decline in mortality from accidents.

White/Nonwhite Trends in Accident Mortality

Some recent trends in accident mortality have been quite favorable. Between 1972-73 and 1982-83, there was a 26 percent decrease in accident mortality rates among white males 15-64 and a 44 percent decrease among men of all other races (Table 1). Among white men, the overall death rate from accidents decreased from 81.9 per 100,000 in 1972-73 to 60.8 in 1982-83. Decreases were recorded in each age group with the largest decrease (38 percent) evident for white males 55-64 and the smallest (17 percent) for white men 25-34. For men of all other races, the mortality rates from accidents dropped from 124.9 per 100,000 in 1972-73 to 70.1 in 1982-83. Reductions were large in every age group, and were larger than those among their white counterparts for all ages except 55-64.

Accidents overshadowed all other causes of death among young men 15–34.

White men have a lower risk of accidental death than nonwhites. In 1982-83 mortality from accidents among nonwhite men was lower than that for whites only at ages 15-19 and 20-24. By ages 45-54 and 55-64, the ratio of nonwhite to white mortality reached 1.7 to 1. Accident death rates among white men were highest at ages 20-24 (89.3 per 100,000) and decreased in each successive age group thereafter until 55-64. Among nonwhite men, however, death rates followed an upward trend, rising from 40.8 per 100,000 at ages 15-19 to 92.2 at ages 55-64.

In 1982-83 motor vehicle accidents accounted for 59 percent of the accident mortality rates among white males 15-64 and 46 percent of accident death rates among nonwhite males. The proportion decreases fairly steadily with age—from about three-fourths [illegible] ages 15-19 to two-fifths at ages 55-64 among white men and from three-fifths at ages 20-24 to one-third at ages 55-64 among nonwhite men.

Motor vehicle accidents remained the major cause of accidental fatalities throughout the working ages.

The trend in motor vehicle accidental death rates has improved, too. From 1972-73 to 1982-83, mortality from motor vehicle accidents decreased 24 percent among white men and 47 percent among nonwhite men aged 15-64. Reductions in mortality among white men varied greatly by age, with the largest improvement (a 40 percent decrease) evident at ages 55-64. Larger reductions in such mortality rates were evident among nonwhite than white men at each age. Among nonwhites, the rates decreased by approximately 47 percent in each age group. Mortality from all

Table 2—Mortality From Leading Types of Accidents Among Men Aged 15–64 United States, 1982–83

	Average Annual Death Rate per 100,000						
Type of Accident	**15–64***	**15–19**	**20–24**	**25–34**	**35–44**	**45–54**	**55–64**
Accidents—All Types	61.6	68.8	85.5	64.2	50.7	51.2	55.6
Motor Vehicle	35.1	49.1	59.1	37.4	26.1	23.0	21.5
Drowning†	3.9	6.5	6.2	4.1	2.7	2.5	2.1
Falls	3.2	1.4	2.2	2.3	2.7	4.7	7.3
Poisoning by solids & liquids	2.6	.8	2.5	4.6	2.8	1.8	1.7
Drugs and medicaments	2.1	.5	2.2	4.2	2.2	1.1	1.0
Fires and flames	2.2	1.0	1.7	2.1	2.0	2.6	3.8
Firearm	1.6	2.5	2.2	1.6	1.3	1.0	.9
Accidental deaths as a percent of all deaths	13%	57%	51%	36%	19%	7%	3%
Motor vehicle accident deaths as a percent of all accident deaths	57	71	69	58	51	45	39

*Adjusted on basis of age distribution of the United States total population, 1940.
†Exclusive of deaths in water transportation.
Source of basic data: Reports of the Division of Vital Statistics, National Center for Health Statistics.

other forms of accidents decreased 28 percent among white men 15-64 and 41 percent among nonwhites in this age range. For whites, the decreases ranged from a low of 17 percent at ages 25-34 to highs of 38 percent at ages 15-19 and 37 percent at 55-64. For nonwhites, the largest reduction (59 percent) was recorded at ages 15-19 and the smallest (31 percent) at ages 55-64.

In 1982-83 motor vehicle accident death rates were lower among nonwhite men than white men at the three youngest age groups. Death rates from all other types of accidents combined were similar through age 24 but higher for nonwhite men thereafter. For both white and nonwhite men, motor vehicle death rates peaked among 20-24 year olds (62.7 per 100,000 whites and 39.7 for nonwhites) and steadily decreased with age.

Mortality by Type of Accident

Motor vehicle accidents remained the major cause of accidental fatalities throughout the working ages; they accounted for almost three-fifths of the total 1982-83 accident mortality among men at ages 15-64 (Table 2). For men aged 15-24, such accidents accounted for nearly 7 out of 10 accident fatalities. The death rate for motor vehicle accidents among men 15-19 was 49.1 and rose to 59.1 at ages 20-24. Past age 24, the death rates from such accidents declined markedly.

Young workers are hurt more frequently than older employees, although not as severely.

Drowning, other than in water transportation accidents, ranked second as a cause of fatal injury among men 15-64, with the most hazardous period occurring under 25. Drowning took 6.5 lives per 100,000 at ages 15-19 and 6.2 lives per 100,000 at ages 20-24. After age 24, the fatality rate from this type of accident decreased, dropping to 2.1 per 100,000 at ages 55-64. Falls, the third leading cause of fatal accidents among working aged men, were a significant factor in accidental mortality for men 35 years old and older. The death rates increased with age, reaching 7.3 among men 55-64. Deaths from falls ranked second to motor vehicle accidents as a cause of accidental death at ages 45-54 and 55-64.

Mortality from accidental poisoning by solids and liquids peaked at ages 25-34. Eighty percent of poisoning deaths among men 15-64 were due to drugs and medicaments. Accident death rates from fires and flames generally rose with advance in age; they were the third leading cause of such deaths among men 45-54 and 55-64. Fatalities from firearm accidents ranked third among the causes of fatal injuries between 15 and 19; the proportion of accidental deaths in this manner decreased with age.

Disability Due to Injuries

Among men of working age, accidents are not only a major cause of death but also a leading cause of disability. Recent data show that young workers are hurt more frequently than older employees, but the more severe cases (fatalities and permanent disabilities) account for a larger proportion of the cases among older workers than among younger ones.[1] An index of injury incidents by occupational groups shows that laborers sustain job-related injuries almost four times the average for all workers and that operatives and craftworkers experience injuries approximately one and one half times this average. In contrast, professional and technical workers, managers and administrators, salesworkers and clerical workers incur injuries about one-fourth the norm.[2] Between 1979 and 1983 the United States Department of Labor Statistics showed an annual decline in work-related injuries, sicknesses and death. However, in 1984 this encouraging trend was reversed and the rates of injuries are expected to continue to increase as more people join the work force.[3]

Economic Impact of Injuries

The economic impact of injuries is frequently overlooked in the ordering of public expenditure priorities. The costs associated with cancer and heart disease are quoted quite frequently but accidents also cost the nation billions of dollars. The National Safety Council recently estimated that all accidents cost the United States $96.9 billion in 1984 in terms of medical expenses, lost wages, property damage, insurance administration and indirect costs.* Motor vehicle accidents accounted for an estimated $47.6 billion, worksite accidents $33.0 billion, home accidents $10.8 billion and public accidents $7.2 billion.[4]

Accidents cost the nation an estimated $96.9 billion in 1984.

Beyond terms of human suffering and death, injuries—which are largely preventable—place an obvious enormous burden on the nation's economic and health care resources. The accidental injuries, disabilities and deaths among working aged men affect the work force, employers, the medical community, insurance companies and the family. We need to think of safety not only as a cost of doing business or keeping well, but as a profitable investment in a prospering, healthy America. ☐

References

[1] Root, N. "Injuries at work are fewer among older employees." *Monthly Labor Review* 104(3):30–34, Mar 1981.

[2] Root, N., Sebastian, D. "BLS develops measure of job risk by occupation." *Monthly Labor Review* 104(10):26–30, Oct 1981.

[3] United States Department of Labor. *Occupational Injuries and Illness in the United States by Industry, 1984.* Washington, D.C.: Bureau of Labor Statistics, 1986.

[4] Statistics Department. *Accident Facts, 1985 Edition.* Chicago, Illinois: National Safety Council, 1985.

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*Total costs exclude duplications between work and motor vehicle and home and motor vehicle costs.

Record Longevity Maintained

Expectation of life at birth in the United States during 1985 was unchanged from the record level established in 1984. Although the average length of life at birth for the entire population has exhibited little, if any, improvement in the past few years, longevity for boys has experienced small but steady gains, resulting in new record highs. On the other hand, life expectancy for infant girls has fluctuated around the record high reported for 1984 and the previous peak in 1982. The preliminary 1985 life tables were prepared by the Metropolitan Life Insurance Company and the 1984 and earlier tables by the National Center for Health Statistics.

Life expectancy at birth for the total resident population has apparently reached a plateau.

Life expectancy at birth for the total resident population has apparently reached a plateau. The 1985 value of 74.7 years was exactly the same as in 1984 and just 0.1 years more than both the 1983 and 1982 figures of 74.6 years. However, the experience of newborn boys is very encouraging. Last year their longevity at birth rose to a new high of 71.2 years, a gain of 0.1 years from 1984 and the third successive year in which it increased by this amount. Among infant girls the preliminary 1985 expectation of life figure was 78.1 years. This represents a decline of 0.2 years from the provisional high of 78.3 years reported in 1984 and is even less than the 1982 figure of 78.2 years.

Influences at Both Ends of the Spectrum

The recent stagnation in life expectancy is a reflection of the shifting mortality experience of the U.S. population. Death rates from all cancers combined continue to rise. In addition, the recurring influenza outbreaks since 1982, with their detrimental effects on the growing number of elderly, have caused mortality from pneumonia and influenza, and chronic obstructive pulmonary diseases and allied conditions to increase. The impact of the flu epidemics has also suppressed the declining trend in mortality from the major cardiovascular diseases. On a more positive note, 1985 was the 23d consecutive year in which infant mortality rates declined. Last year the infant death rate fell to an estimated record low of 10.5 per 1,000 live births. In 1984 the provisional mortality rate during the first year of life was 10.6 per 1,000 and in 1983 the final rate was 11.2 per 1,000. In the past few years, the drop in the infant mortality rate was more rapid among boys.

Last year the infant death rate fell to an estimated record low of 10.5 per 1,000 live births.

Diminishing Differences Between the Sexes

The longevity gap between newborn boys and girls has diminished to its narrowest point since 1964. As a result of the recent divergent patterns in expectation of life at birth, the longevity advantage of infant girls declined to just 6.9 years in 1985. During

1984 the expectancy disparity in favor of girls was 7.2 years and as recently as 1981 was 7.5 years.

Past childhood the 1985 life expectancy figures for the total population were either unchanged or fractionally lower than those in 1984. Average remaining future lifetime for men at each of the selected ages shown in Table 1—with three exceptions—remained at their record level. For men at ages 15 and 35, expectation of life rose by 0.1 years, establishing a new record; on the other hand, for men aged 75 the highest expectancy figure occurred in 1982—namely, 9.1 years. Among women the provisional 1985 life table indicates that at these ages the number of additional years of life that could be anticipated uniformly declined from their prior peak.

Table 1—Expectation of Life (In Years) United States, 1979–81 to 1985

Age	National Center for Health Statistics 1979–81	1983	1984*	Metropolitan Life Insurance Company 1985†
Total Population				
0	73.9	74.6	74.7	**74.7**
15	60.2	60.8	60.8	**60.8**
25	50.8	51.3	51.4	**51.4**
35	41.4	41.9	42.0	**41.9**
45	32.3	32.7	32.7	**32.7**
55	23.9	24.1	24.2	**24.2**
65	16.5	16.7	16.8	**16.8**
75	10.5	10.7	10.7	**10.6**
Male				
0	70.1	71.0	71.1	**71.2**
15	56.5	57.3	57.3	**57.4**
25	47.4	48.0	48.1	**48.1**
35	38.2	38.8	38.8	**38.9**
45	29.2	29.7	29.8	**29.8**
55	21.1	21.4	21.5	**21.5**
65	14.2	14.5	14.5	**14.5**
75	8.9	9.0	9.0	**9.0**
Female				
0	77.6	78.1	78.3	**78.1**
15	63.8	64.2	64.3	**64.2**
25	54.2	54.5	54.6	**54.5**
35	44.5	44.9	44.9	**44.8**
45	35.2	35.4	35.5	**35.4**
55	26.4	26.6	26.7	**26.5**
65	18.4	18.6	18.7	**18.6**
75	11.6	11.8	11.9	**11.8**

*Provisional. †Estimated.

Table 2—Expectation of Life at Selected Ages, By Race and Sex United States, 1969–71 to 1984

	White			All Other					
				Total			Black		
Age	1969–71	1979–81	1984*	1969–71	1979–81	1984*	1969–71	1979–81	1984*
Male									
0	67.9	70.8	71.8	61.0	65.6	67.3	60.0	64.1	65.5
25	45.7	47.9	48.6	40.3	43.5	44.7	39.4	42.1	43.1
45	27.5	29.5	30.1	24.6	26.6	27.5	24.0	25.6	26.2
65	13.0	14.3	14.6	12.9	13.8	14.1	12.5	13.3	13.4
85	4.6	5.1	5.1	6.0	5.7	6.1	5.9	5.6	5.8
Female									
0	75.5	78.2	78.8	69.0	74.0	75.2	68.3	72.9	73.7
25	52.4	54.6	55.0	47.2	51.1	52.0	46.6	50.1	50.8
45	33.5	35.5	35.8	29.8	32.8	33.6	29.3	31.9	32.5
65	16.9	18.5	18.8	16.0	17.6	18.2	15.7	17.1	17.5
85	5.5	6.3	6.7	7.1	7.2	7.9	7.0	7.1	7.8

*Provisional.
Source: Various reports by the National Center for Health Statistics.

Longevity Trends by Race

In recent years longevity gains among nonwhites have outpaced those of whites. Between 1979–81 and 1984, the average remaining lifetime for newborn nonwhite boys rose from 65.6 years to 67.3 years or by 1.7 years. On the other hand, for white boys the increase was only 1.0 years—to 71.8 years. Moreover, during the decade 1969–71 to 1979–81, life expectancy for nonwhite infant boys rose by 4.6 years compared with just 2.9 years for whites. As a result of the favorable trend, the gap in expectation of life at birth between whites and nonwhites diminished to 4.5 years in 1984 from 5.2 years in 1979–81 and 6.9 years in 1969–71. For baby girls, the reduction in the longevity disparities by race was more pronounced. In 1984 newborn white girls could expect to

> In recent years longevity gains among nonwhites have outpaced those of whites.

Table 3—Expectation of Life and Mortality Rates at Single Years of Age by Race and Sex, United States, 1983

Age	EXPECTATION OF LIFE IN YEARS					MORTALITY RATE PER 1,000				
	Total Persons	White		All Other		Total Persons	White		All Other	
		Male	Female	Male	Female		Male	Female	Male	Female
0	74.6	71.7	78.7	67.2	74.9	11.2	10.8	8.6	18.3	15.2
1	74.5	71.5	78.4	67.4	75.1	8	8	6	1.1	8
2	73.5	70.5	77.4	66.5	74.1	6	6	5	9	7
3	72.6	69.6	76.4	65.5	73.2	5	5	4	8	6
4	71.6	68.6	75.5	64.6	72.2	4	4	3	6	5
5	70.6	67.6	74.5	63.6	71.3	3	4	3	5	4
6	69.7	66.6	73.5	62.7	70.3	3	3	2	4	3
7	68.7	65.7	72.5	61.7	69.3	3	3	2	4	3
8	67.7	64.7	71.5	60.7	68.3	2	3	2	3	2
9	66.7	63.7	70.6	59.7	67.4	2	2	2	3	2
10	65.7	62.7	69.6	58.8	66.4	2	2	1	3	2
11	64.7	61.7	68.6	57.8	65.4	2	2	1	3	2
12	63.7	60.7	67.6	56.8	64.4	2	3	2	4	2
13	62.8	59.8	66.6	55.8	63.4	3	4	2	5	3
14	61.8	58.8	65.6	54.8	62.4	4	6	3	6	3
15	60.8	57.8	64.6	53.9	61.4	6	8	4	7	4
16	59.8	56.9	63.7	52.9	60.5	7	1.0	4	9	4
17	58.9	55.9	62.7	51.9	59.5	8	1.2	5	1.1	5
18	57.9	55.0	61.7	51.0	58.5	9	1.3	5	1.3	5
19	57.0	54.1	60.7	50.1	57.5	1.0	1.4	5	1.5	6
20	56.0	53.1	59.8	49.1	56.6	1.0	1.5	5	1.7	7
21	55.1	52.2	58.8	48.2	55.6	1.1	1.5	5	1.9	7
22	54.2	51.3	57.8	47.3	54.7	1.1	1.6	5	2.1	8
23	53.2	50.4	56.9	46.4	53.7	1.1	1.6	5	2.2	8
24	52.3	49.4	55.9	45.5	52.7	1.1	1.6	5	2.3	9
25	51.3	48.5	54.9	44.6	51.8	1.1	1.6	5	2.4	9
26	50.4	47.6	54.0	43.7	50.8	1.1	1.5	5	2.5	1.0
27	49.4	46.7	53.0	42.8	49.9	1.1	1.5	6	2.6	1.0
28	48.5	45.7	52.0	41.9	48.9	1.2	1.5	6	2.7	1.0
29	47.6	44.8	51.0	41.1	48.0	1.2	1.5	6	2.9	1.1
30	46.6	43.9	50.1	40.2	47.0	1.2	1.5	6	3.0	1.2
31	45.7	42.9	49.1	39.3	46.1	1.2	1.5	6	3.2	1.2
32	44.7	42.0	48.1	38.4	45.1	1.3	1.6	7	3.3	1.3
33	43.8	41.1	47.2	37.5	44.2	1.3	1.6	7	3.5	1.4
34	42.8	40.1	46.2	36.7	43.3	1.4	1.7	7	3.6	1.5
35	41.9	39.2	45.2	35.8	42.3	1.5	1.7	8	3.8	1.7
36	41.0	38.3	44.3	34.9	41.4	1.5	1.8	9	4.0	1.8
37	40.0	37.3	43.3	34.1	40.5	1.6	1.9	1.0	4.2	2.0
38	39.1	36.4	42.3	33.2	39.6	1.8	2.0	1.1	4.4	2.1
39	38.2	35.5	41.4	32.4	38.6	1.9	2.2	1.2	4.7	2.3
40	37.2	34.6	40.4	31.5	37.7	2.1	2.4	1.3	5.0	2.5
41	36.3	33.6	39.5	30.7	36.8	2.2	2.6	1.4	5.3	2.7
42	35.4	32.7	38.5	29.8	35.9	2.4	2.8	1.6	5.8	2.9
43	34.5	31.8	37.6	29.0	35.0	2.7	3.1	1.7	6.3	3.2
44	33.6	30.9	36.7	28.2	34.1	3.0	3.4	1.9	7.0	3.6
45	32.7	30.0	35.7	27.4	33.2	3.3	3.8	2.1	7.7	4.0
46	31.8	29.1	34.8	26.6	32.4	3.6	4.2	2.3	8.5	4.4
47	30.9	28.2	33.9	25.8	31.5	4.0	4.6	2.6	9.2	4.9
48	30.0	27.4	33.0	25.0	30.7	4.5	5.2	2.9	9.9	5.3
49	29.1	26.5	32.1	24.3	29.8	4.9	5.8	3.2	10.6	5.7
50	28.3	25.7	31.2	23.5	29.0	5.4	6.4	3.6	11.3	6.2
51	27.4	24.8	30.3	22.8	28.2	6.0	7.1	3.9	12.1	6.7
52	26.6	24.0	29.4	22.1	27.4	6.6	7.9	4.3	13.0	7.2
53	25.8	23.2	28.5	21.4	26.6	7.2	8.8	4.8	14.1	7.9
54	24.9	22.4	27.7	20.7	25.8	7.9	9.7	5.2	15.4	8.6
55	24.1	21.6	26.8	20.0	25.0	8.6	10.7	5.6	16.8	9.4
56	23.3	20.8	25.9	19.3	24.2	9.4	11.8	6.2	18.2	10.2
57	22.6	20.1	25.1	18.7	23.5	10.3	13.0	6.7	19.7	11.1
58	21.8	19.3	24.3	18.0	22.7	11.2	14.1	7.4	21.5	12.1
59	21.0	18.6	23.4	17.4	22.0	12.2	15.4	8.1	23.4	13.1
60	20.3	17.9	22.6	16.8	21.3	13.3	16.8	8.9	25.5	14.2
61	19.6	17.2	21.8	16.3	20.6	14.5	18.2	9.7	27.6	15.4
62	18.8	16.5	21.0	15.7	19.9	15.7	19.8	10.6	29.5	16.5
63	18.1	15.8	20.3	15.2	19.2	17.0	21.6	11.5	31.0	17.4
64	17.4	15.2	19.5	14.6	18.5	18.3	23.6	12.5	32.2	18.1
65	16.7	14.5	18.7	14.1	17.9	19.7	25.7	13.5	33.2	18.8
66	16.1	13.9	18.0	13.6	17.2	21.3	28.0	14.6	34.3	19.6
67	15.4	13.3	17.2	13.0	16.5	23.0	30.5	15.9	36.1	20.9
68	14.8	12.7	16.5	12.5	15.9	25.0	33.3	17.3	39.0	22.9
69	14.1	12.1	15.8	12.0	15.3	27.3	36.3	19.0	42.7	25.4
70	13.5	11.5	15.1	11.5	14.6	29.7	39.5	20.8	47.1	28.3
71	12.9	11.0	14.4	11.0	14.0	32.3	43.0	22.8	51.6	31.2
72	12.3	10.5	13.7	10.6	13.5	35.1	46.8	24.9	55.6	33.8
73	11.7	9.9	13.1	10.2	12.9	38.0	50.9	27.3	58.5	35.9
74	11.2	9.4	12.4	9.8	12.4	41.0	55.3	29.9	60.6	37.5
75	10.7	9.0	11.8	9.4	11.9	44.3	60.2	32.8	62.4	39.2
76	10.1	8.5	11.2	9.0	11.3	47.9	65.3	36.0	64.6	41.2
77	9.6	8.1	10.6	8.6	10.8	51.9	70.9	39.6	67.9	44.0
78	9.1	7.7	10.0	8.2	10.3	56.4	76.9	43.6	72.5	47.8
79	8.6	7.2	9.4	7.8	9.8	61.4	83.2	48.2	78.7	52.5
80	8.1	6.9	8.8	7.4	9.3	67.0	90.0	53.5	86.5	58.4
81	7.7	6.5	8.3	7.1	8.8	73.3	97.3	59.6	95.9	65.3
82	7.3	6.1	7.8	6.8	8.4	80.4	105.0	66.6	106.9	73.3
83	6.9	5.8	7.3	6.5	8.0	88.5	113.0	75.0	119.3	82.5
84	6.5	5.5	6.9	6.4	7.7	97.7	121.3	85.0	132.7	92.8
85	6.1	5.2	6.5	6.3	7.5					

Source: National Center for Health Statistics.

live to 78.8 years compared to 75.2 years for nonwhite girls or some 3.6 years longer. In 1979–81 the white longevity advantage at birth was 4.2 years and in 1969–71 it was 6.5 years.

The nonwhite population is, for the most part, comprised of blacks, and although their life expectancy increases were somewhat smaller than those of other nonwhites (for example, Japanese or Chinese) they were larger than for whites. Thus, in the period under review, the longevity differential between newborn whites and blacks gradually diminished. By 1984 the white advantage in expectation of life at birth had fallen to 6.3 years for boys and to only 5.1 years for girls. In 1969–71 the differences were 7.9 years and 7.2 years, respectively.

Racial Gap Narrowing Before Midlife

Virtually all of the progress in reducing the longevity disparity between races occurred before midlife. With advance in age, the nonwhite expectancy gains generally moderated but, in some instances, widened. Between 1979–81 and 1984, longevity of black and other nonwhite men and women aged 25 experienced larger increases than for whites. With the exception of black men, this was also the finding at age 45—in their case no narrowing was recorded.

> Virtually all of the progress in reducing the longevity disparity between races occurred before midlife.

No diminishment in the longevity gap occurred between white and nonwhite men aged 65. However, when compared with black men at this age, the expectation of life advantage of white men increased. Life expectancy for nonwhite women aged 65 continued to approach the level of white women.

An examination of the average remaining lifetime at age 85 in the period under review reveals a completely different picture. Most notable are the larger nonwhite longevity figures. Additionally, the trend data show that between 1969–71 and 1979–81 expectation of life for white men and women increased more rapidly than that for nonwhites. After 1979–81, there was an apparent reversal in the pattern of improvement. It should be noted that at the advanced ages, life expectancy values are subject to fluctuation because of potential variations in the underlying calculations.

Table 2 presents the recent trend in expectation of life figures by race and sex. Notwithstanding the generally larger longevity gains among the nonwhite population, their mortality rates continue to remain relatively higher than the corresponding rates among whites. This is evident from the right hand section of Table 3, which shows single years of age data on life expectancy and mortality. 1983 is the latest year for which such details are available. Death rates were less than one per 1,000 population at ages 1 to 36 among white women, and at ages 1 to 25 among nonwhite women. Mortality at this low level prevailed only at ages 1 to 15 among white men and at ages 2 to 16 among nonwhite men. Death rates remained below 5 per 1,000 until age 47 for white men and age 53 for white women; among nonwhites, death rates below 5 per 1,000 held until age 39 for men and age 47 for women.

Based on mortality conditions as they existed in 1983, about 4 out of every 10 white women could expect to celebrate their 85th birthday, while the likelihood was only about 2 in 10 for white men. Among nonwhites the chances of surviving to 85 were about 1 in 3 for women and 1 in 7 for men. □

STATISTICAL INFORMATION, PLEASE

FOR IMMEDIATE RELEASE! EDITOR

Questions frequently come to ***SB*** that we would like to share with our readers. This new feature column will attempt to answer as many of your statistically oriented questions as space permits. We hope you will enjoy this new feature and will participate by sending us your queries.

* *

Q *Does bubonic plague, the famous black death of the Middle Ages, ever occur now in the United States?*

A Yes, although it is a relatively rare disease. Bubonic plague, a flea-transmitted disease of rodents transmissible to humans by vector fleas or by direct contact with an infected animal, does occur in the United States. In fact, the number of cases among humans has increased substantially during the past decade and averaged about 20 per year between 1975–84, but there have been as many as 40 cases reported in one year (1983). The fatality rate remains very high—18 percent of all cases, despite the the availability of effective antibiotics.

* *

Q *In which month do most births occur in the United States?*

A August. Data for the last decade show an average of 316,000 births occurring in August in this country. Second in rank order is July, with births fractionally lower than in August. September registered births just 2 percent below the number recorded for August.

* *

* *

Q *Of the 15 leading causes of death, which affect men much more than women?*

A The death rate from homicide and legal intervention, and suicide is 3½ times higher in men than women. The ratio is almost three to one for accidents and adverse effects, but is somewhat lower for chronic obstructive pulmonary diseases and allied conditions. Mortality from chronic liver disease is twice as common among men than among women. Among the causes of death for which the death rate for men is 1½ to two times that for women are nephritis, nephrotic syndrome and nephrosis, septicemia, malignant neoplasms, pneumonia and influenza and diseases of the heart.

* *

Q *Ages 25–64 are known as the years of greatest economic productivity. How many U.S. households are headed by persons in these years, and where do they live?*

A According to the latest U.S. Bureau of the Census data, there are about 63 million households throughout the United States headed by persons aged 25–64. By region, the majority of these households are concentrated in the South (33 percent). Next in rank order are Midwest (25 percent), Northeast (22 percent) and the West (20 percent).

* *

Please send your questions to:
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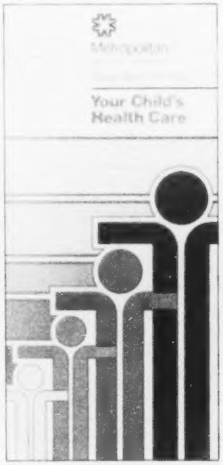
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For further information, write to: Health and Safety Education Division, Dept. SB, Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010.

Coming in Future Issues

- Live Births by Age of Mother
- State Variations in Longevity
- Motor Vehicle Accidents: Variations by State and Sex
- Utilization and Costs of Psychiatric Care

Historical Perspectives

30 YEARS AGO

IN THE 1956 STATISTICAL BULLETIN

American husbands in 1955 were relatively young—almost 30 percent were under age 35 and a quarter were 35–44. Most—90 percent—maintained a household for their family and four-fifths of the families with husband aged 25–34 had at least one young child. Large households were common up to age 44, but then decreased in size as children left home. Even then, American couples with husband aged 45 or older had nearly 10 million of their children under age 18 living with them. (Currently the number is about 8 million—ed.) About 95 percent of all married men under age 65 were in the labor force. After age 65 the proportion was still above a half but then diminished rapidly. Although the husband was the primary breadwinner, an increasing proportion of wives worked to supplement the family income. (Presently, over 50 percent of married women are in the labor force—ed.) (Page 4, April) □

Cancer mortality ranked second to heart disease as a cause of death at ages 45–64. At that time, there were more than 90,000 cancer deaths at these ages in the United States, representing one-fourth of the total mortality. (Today, there are about 137,000 cancer deaths annually at these ages, accounting for one-third of the total deaths—ed.) A Metropolitan Life study for 1944–45 and 1954–55 showed a marked rise in cancer mortality among middle-aged men due primarily to increased lung cancer deaths. Among women, there was a sizable reduction in uterine cancer—the result of preventive measures, early detection and therapy. Breast cancer mortality, however, remained relatively stable despite a campaign for early detection. Early detection and treatment were seen as the major means of control, but eventual solution of the cancer problem would depend upon research into the causes. (Page 1, June) □

A study of hospitalization among Metropolitan male employees aged 17–64 for 1953 to 1955 revealed that about 10 percent were hospitalized annually. Hospitalization increased with age both in frequency and length of stay—frequency varied from 6 per 100 at ages 25–34 to 14 at ages 55–64; length of stay varied from 9 to 14 days at these ages, respectively. (In the general population (1982), lengths of stay varied from 6 to 8 days for men at ages 25–34 and 55–64, respectively—ed.) Abdominal operations, particularly herniotomies, appendectomies and cholecystectomies were the most common reasons for surgical hospitalization. Among nonsurgical causes—diseases of the circulatory and digestive systems were the most common. Psycho-neurotic disorders required the longest period of hospitalization. (Page 1, February) □

In 1955 American school children and youth were enjoying remarkably good health. A steady reduction in their mortality was evident between 1946 and 1955. A Metropolitan Life study on policyholders aged 5–19 revealed that accidents accounted for almost half of the deaths among boys and for one-fourth among girls. Cancer ranked next, ahead of all other diseases. (Recent data for the general population show that accidents and cancer combined are responsible for almost two-thirds and three-fifths of the mortality among boys and girls aged 5–19, respectively—ed.) Decline in morbidity and mortality from infectious and communicable diseases presented an encouraging picture. Hospital care was mainly for accidental injuries, tonsillectomies and appendectomies. Advances in medicine and nutrition had contributed to good health. Further efforts to foster good health, nutrition, and safety habits would eventually realize even greater improvements. (Page 3, August) □

A study of seasonal disability patterns among "blue collar" indoor and outdoor workers insured with Metropolitan was undertaken for 1954–55. Disability rates for both groups of workers peaked in the winter months with outdoor workers experiencing the higher rates. During winter, outdoor workers had rates of at least 1½ times those for indoor workers for such conditions as diseases of the circulatory and genito-urinary systems and accidents. During summer, the outdoor workers fared better than their indoor counterparts. This was particularly apparent for respiratory and circulatory diseases. Only one cause of disability—accidents—showed consistently higher rates among outdoor workers throughout the year. (Page 8, August) □

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